

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

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**MONROEVILLE, Pa.** — The Data Base Language Task Group of the Conference on Data Systems Languages (Codasy) Programming Language Committee (PLC) has released its recommendations for the inclusion of a data base facility in Cobol. PLC would like to hear from potential users.

The proposal is based on the concepts and facilities described in the Codasyl data base task group report of April 1971.

PLC Chairman Ronald Hamm of Honeywell has said, however, his committee will defer action on the proposal until after July 15.

Copies of the proposal are available for \$2.50 each from the Receiver General for Canada. Requests should be addressed to the Technical Services Branch, Department of Supply and Services, 5th floor, 88 Metcalfe St., Ottawa, Ontario, Canada, K1A 0S5.

Reactions to the proposal, Hamm said, should be addressed to PLC, through Codasyl, P.O. Box 124, 15146.

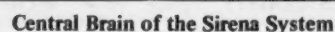
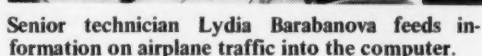
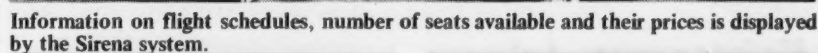
**MONTVALE, N.J.**—IBM, absent for two years from the joint computer conferences, will be among the more than 150 exhibitors in the June National Computer Conference and Exposition (NCC), according to the show sponsor, the American Federation of Information Processing Societies (Afips).

IBM last exhibited at a joint computer conference in the Fall of 1970 in Houston, Afips added.

Approximately 80% of capacity, or about 560 booths have been reserved for NCC, successor to the joints, an Afips spokesman said. In January alone Afips sold about 30% of its capacity.

The show will be at the New York Coliseum June 4-8.

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**Russia's Sirena computer system for the booking of airline reservations is now operating with 256 terminals installed in all Aeroflot ticket offices in Moscow and in 28 cities throughout the country. The Sirena also provides information on ticket prices and plane schedules, cancels reservations, and totals receipts, the number of seats sold and the number of unfulfilled ticket orders. The computer handles up to five requests a second. Each request entails 10,000 operations.**

**By Alan Taylor**  
Special to Computerworld

**NEWTONVILLE, Mass.**—A search for some of the contents of the Control Data data base, access to which was destroyed by Control Data, has produced a remarkably complete picture of the gross profit margins used by IBM in manufacturing, maintenance and rental cases.

An analysis of the data indicates that maintenance and labor costs, as of February 1972, were being marked up by IBM approximately 300% (the users of the models 20, 1800 and 1130 getting a slightly less markup than the users of the other 360 and 370 machines). For example, IBM was paying an engineer \$8/productive hour and was charging \$32/hr for his services.

These figures taken from the different IBM depositions for the case, and considered with known facts such as IBM's normal writeoff periods of four years, provide the basis for a look into as current as possible IBM internal pricing structures and maintenance strategies.

## It Began With a Suit

The search for the documents actually started with some of the IBM depositions in the Advanced Memory Systems case. Early in 1972 Advanced Memory Systems, together with Intel Corp., sued IBM to prevent the company from withdrawing maintenance from systems with add-on Advanced Memories over 64K. Toward the end of February 1972 the case was settled, with IBM agreeing to give "best efforts" maintenance. By then, however, a number of depositions had been filed with the court.

One of these made explicit reference to the Control Data index, and included details showing IBM had reported it was maintaining 95% of the 35,129 Model 30 and larger computers it had built.

During the original trial preparation these figures had been expected to be strongly emphasized to show an apparent monopoly situation.

The review of the depositions turned up a complete salary scale for the overall maintenance force used by IBM, together with the number of persons in each of the 30-odd categories, the cost of the Model 30 program, the cost of upgrading from a 32K Model 30 to a 64K system, and even

the national averages for maintaining the 32K and 64K Model 30 systems.

## Secrecy Violated

During the case IBM had protested strongly about providing much of this data, claiming it was secret, and agreeing only to provide it under seal. No one, however, thought to tell the IBM analyst that the IBM national averages for the

*(Continued on Page 2)*

**By Ronald A. Frank**  
Of the CW Staff

**NEWTONVILLE, Mass.**—The attractive lease terms available to prospective 370 users can also have some unfavorable side effects for the unwary lessee.

Many users enter into third-party lease agreements strictly for the low price, and many times that is all they get.

One of the newer lease arrangements (usually completely transparent to the user) is the leasing partnership which gives some attractive tax shelter advantages to the partners while severely restricting the user for the life of the lease.

"The partnership which owns the user's machine may not be interested in spending any cash to upgrade the user's machine," according to one leasing expert.

These partnerships are carefully arranged between a financing institution and an investor looking for tax writeoffs. The bank usually gets most of the cash flow from the user while the investor gets the needed tax writeoffs. The investor

may get some revenue but he will also get some offsetting cash expenses to balance it out.

"The partnership may have established a pay-back curve to break even in the eight-year life of the partnership," the expert said, "and since the partnership owns the computer system there are some serious problems for the user. The partnership may not want to add an upgrade feature to the user's system unless the feature can be paid out in full over the remaining time of the lease," he said.

And most users traditionally begin to outgrow their systems during the tail end of the eight-year leases. "If a user wanted to add another disk subsystem to a leased CPU that had only three more years to go until full pay-out, the charges could be very high," the leasing expert said.

In order for the partnership to recover the cost of the disk in three years, the user might have to pay double or even triple the IBM rental price. And the partnership is not interested in hearing about



## (Continued from Page 1)

### Fine Print

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## Wheeling and Dealing

(Continued from Page 1)

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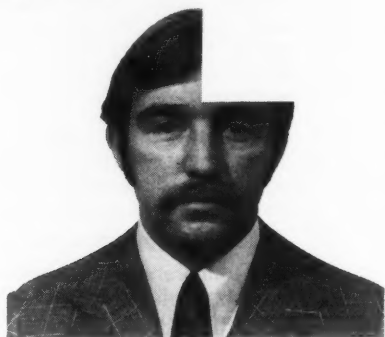
- ☐ Always needs more room.
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- ☐ Needs more and faster tape drives in less space.
- ☐ Fights for more and faster disk drives.
- ☐ Can't get service people fast enough.
- ☐ Never has a big enough budget.

## 370 Users . . . Ampex Offers These Problem Solvers

**Mainframe memory enhancement for IBM 370 models 135, 145, 155, 165, 158 and 168.**

The ARM-3360 is the Ampex memory enhancement for IBM models 155 and 165. It will expand a 155 to 2 megabytes and a 165 to 3 megabytes of total Ampex memory without any CPU or software modifications. This can save IBM 370/155 users as much as \$140,000 (depending on the computer model). Operating speed and size of this proven dependable main memory are the same as the IBM 3360.

ARM-158 or 168 semiconductor memories will be available for users of either IBM 370 model 158 or 168 virtually upon delivery of the CPU.



The Ampex ARM-135 is a semiconductor memory enhancement that equals IBM-135 enhancement limits of 240K bytes in a compact 30" x 30" x 60" module. Equally important, Ampex also offers 48K and 96K byte modules for those who need some, but not maximum, memory capacity. Other significant features: The ARM-135 has the same transient power protection as IBM, its own test panel (unlike IBM) so you can test off-line, and is designed to take maximum advantage of IBM diagnostic routines. And you save up to 40% without sacrificing any performance.

The Ampex ARM-145 also is a semiconductor memory offering expansion to 512K bytes of memory. A real space saver, the ARM-145 stores up to 352K bytes in a single 24" x 60" x 60" cabinet. The ARM-145 has the same transient power protection, the same error-correction circuitry as the IBM 3345, its own test panel, and will take maximum advantage of IBM diagnostic routines . . . all at significant dollar savings.

**Tape drives.** The biggest news since Ampex pioneered tape recording is the new two-in-one configuration for the Ampex TC-38/TM-34 tape subsystem. Now you can reduce the amount of space required for

tape drives and controllers in your DP center by nearly 50% . . . or double the number of drives without allocating more space. You get two high-performance 3420-compatible tape drives with data rates to 200 KB in a single cabinet, only a little larger than one individually mounted tape drive. But space reduction is only the beginning. The autothread on the TM-34 now is equipped with an exclusive "halo of air" that vastly improves threading without the reel-surround cartridge. The tape will literally thread itself from any position. Furthermore, the TM-34 has an automatic reel latch that forever eliminates manually operated locking levers or buttons. And, of course, this drive has a radial interface for operation with either the Ampex TC-38 or the IBM 3803 controller. Format configurations include any combination of 9-track, single or dual density, and 7-track with data rates from 60 to 200 KB.

And, of course, the TM-34 is also available as a stand-alone unit with data rates up to 320 KB.



**Disks.** Whether or not your 370 has ISC, Ampex disk drive systems will save you money and space. Compatible with either the 3830 or the 3333, one Ampex controller will handle 16 drives with a total storage capacity of 1.6 billion bytes. That's only part of the story. Add plug interchangeability, average access time of 28 milliseconds, convenient top loading, read-write compatibility, storage of 100 million bytes per drive, dual channeling and faster starts and stops. And you save 15% with the Ampex DS-330 system.

## 360 Users . . . Ampex Offers These Problem Solvers

**Mainframe memory enhancement.** For IBM models 22, 30, 40, 50, 65, and 67. ARM-22 expands the 360/22 to 64K; ARM-30 can expand the 360/30 to 128K; and ARM-40 can expand the 360/40 to 448K. The ARM-50 works to 1½ megabytes, and the ARM-2365 is designed for use with IBM models 360/65 and 67.



**Mainframe-ECM.** Equipped with a semiconductor cache memory, the standard ECM operates at the effective speed of the IBM 2365 mainframe memory. It is the most economical 1 to 8 megabyte replacement for the 2365. For the model 50, ECM still is available with a 2.5 microsecond cycle time.

**Disks.** Ampex Double Density Disks are today's most cost-effective technique for adding storage capacity . . . 233 megabytes in half the space or 466 megabytes in the same space as a 2314 system. No software changes under DOS or OS.

**Tape drives.** There's no space-saving system on the market to compare with the new Ampex two-in-one configuration. Everything we've written about Ampex tape drive for IBM-370 systems is equally true for 360 systems. So, why not expand the capabilities of your IBM-360 and save the expense of starting all over again with a 370?



## Univac Users . . . Ampex Offers These Problem Solvers

**Mainframe memory enhancement.** The ARM-1108 operates at the same speed and is completely compatible to 1108, 1106 and 494 systems operating with Exec 2, Exec 8 or OMEGA. Furthermore, this memory enhancement has a built in MMA to facilitate use in multi-processor environments. No minimum Univac memory is required.

**Disks.** The Ampex DS-8430 disk subsystem is a high-performance alternative to either Univac disk or drum systems. The DS-8430 has a radial interface to provide disk operation with proven FASTRAND software. This disk subsystem may also operate in a FASTRAND emulation mode, providing all the advantages of removable disks. It's the most efficient disk subsystem to be put on a Univac computer.

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## Attendees Agree:

# Human Factors Need Work

By Mike Merritt  
CW Correspondent

SAN JOSE, Calif. — The technical problems of computer communications are pretty well in hand; it is the human, end-user problems that call for work. This was the conclusion echoed repeatedly at the second annual Computer Communications Conference held here recently.

"We're going to have to rethink what we

### Computer Communications Conference

want these conferences to do," said conference chairman Donald T. Comer.

The traditional technical papers on line costs, self-repairing time-sharing systems and interactive programming languages shared the program with papers ranging from human factors in selecting terminals

to "Sociological Spin-Off from Computer-Communications Systems Engineering," all dealing in some way with how T/S systems affect people.

The seminar, Time-Sharing: Past, Present Future, was sponsored by the San Francisco chapter of the ACM, a San Francisco Group of the IEEE and San Jose State University.

Other topics at the conference were conferencing techniques, and a novel T/S-based "knowledge workshop," designed to increase the productivity of "knowledge workers" in their daily activities.

#### Computer Crimes

Privacy and security was another prime subject at the conference.

"It should become increasingly difficult to pull computer crimes in the next few years," according to Donn Parker, a Stanford Research Institute computer special-

## Computerniks Not People-Oriented

SAN JOSE, Calif. — "The growth of computer communications is being impeded because, among other reasons, the computer fraternity appears to dislike communicating with people," hypothesized A.J. Lipinski of the Institute for the Future, at the Computer Communications Conference. Lipinski suggested that computer types "appear to favor the interests of computers over people."

Lipinski cited log-in procedures as an example of the supercilious attitude of computerniks, noting their complexity, lack of standardization and "nit-picking" demands for precise usage. "Only the most racist or exclusive clubs... would dream of employing such haughty entry procedures," he opined.

He also scored the negative reinforcement common in diagnostic procedures, where mistakes are noted as "illegal" and "improper." "Positive reinforcement is unheard of, and even politeness is rare," he added.

Because of these and similar tendencies of computer system designers, Lipinski claimed, non-computerniks, whose feelings about computers are mixed at best, are put off from really learning to use interactive systems.

Engineers, and particularly computer engineers, won't be able to solve these problems, Lipinski claimed. It will be necessary to give "final authority on system communication to humanists" with computer system knowledge, he suggested.

tion, Parker said.

He warned, though, that when the crimes do occur, it is likely that the dollar losses will be much greater, noting the possibility of millions of thefts a second once a system has been penetrated.

Parker described the computer criminals he has met as generally young, bright and highly motivated. They frequently don't feel their criminal acts are immoral, he said. One reason is a feeling that hurting organizations isn't bad.

Another reason is the free and easy ethics of the computer industry. He quoted the prosecutor of one computer crime who said "he had never seen a field where so many illegal and unethical acts go on."

#### Backward Laws

Current laws often aren't adequate to cope with computer crimes, Parker said. "What is a theft? Does it happen once when an embezzler cracks the system — or does it happen each time his program takes money from one of the thousands of accounts being processed?" he asked.

Many state laws, as written, wouldn't allow a data thief to be prosecuted for theft, he noted. The statutes simply don't cover data as a stealable, valuable item.

He also noted one case where a judge threw a computer crime out of court because nobody could understand what was going on — the subject was just too technical for the judge, lawyers and jury.

Many companies contribute to data or program theft through lack of the simple precaution of inserting a comment card reading "this program property of XYZ Corp," he added.

#### Lower Line Costs?

The technical side of the conference was certainly not lacking. The near- and long-term future of line costs, for example, was the subject of a presentation by Dieter Lohr, also of the Stanford Research Institute.

There are a number of technological developments that could reduce long haul, high volume transmission costs sharply, Lohr said, naming coaxial cables, waveguides, satellites and fiber optics as possibilities.

These developments could increase  
(Continued on Page 5)

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## Illiac IV 'Expected to Work' But Now Failing at High Rate

By Mike Merritt  
CW Correspondent

SAN JOSE, Calif. — Illiac IV, the 64-processor supercomputer, currently has a mean time between failure of about five seconds, according to Loren G. Bright of the Nasa-Ames Research Center, home of the experimental ma-

chine. The "fabrication contract" for the Burroughs-built machine was completed early in December, and the staff at Ames is currently testing and setting up the system, Bright told attendees at the Computer Communications Conference.

### Computer Communications Conference

Bright said he expects the machine to be working — "but still fairly flakey" — by the beginning of March, and in full operational mode by October. The objective mean time between failure, he noted, is four to six hours.

#### Linked to Arpanet

The huge parallel processor will be hooked into the Advanced Research Projects Agency Network (Arpanet) [CW, Aug. 30, 1972] through a PDP-10, and will use a Burroughs B6700 for compiling, Bright said. The computing power of Illiac IV will be about 100 times that of a CDC 6600, he noted.

The Ames staff is now "striving to develop an operating system" using the B6700 as a software simulator.

Ames hopes to be able to "retail" the resources of Illiac IV "to any and all comers," Bright said. Since both the machine and the Arpanet were developed with government funds, however, there are definite legal problems to be overcome in this area.

## It's Human Factors That Call For Work

(Continued from Page 4)

transmission capacity by orders of magnitude over present equipment, he said. A comparable increase in local transmission capacity, or comparable lowering in price doesn't seem likely though.

The effect of new technologies on end-user costs depends on two competing factors, he claimed. The first is the tremendous investment — some \$70 billion — in existing common carrier facilities. This amount cannot be written off quickly; it has to be paid for.

#### Increased Competition

The other factor is increased competition in data transmission, Lohr noted, citing data carriers such as Microwave Communications Inc. and Datran, and domestic satellite operators.

The common carriers are already reacting to the potential competition, Lohr said, with the projected data-under-voice service.

Lohr came to several conclusions:

- Prices for wideband service will drop
- Prices for voice, dialed, switched networks will rise at the inflationary rate
- Prices for 50 kbit/sec lines will drop
- There may be some shift of costs from institutional users to individual customers.

## N.Y. Rent Control Faces Lawsuit—Again

By a CW Staff Writer

NEW YORK — This city's computerized rent control system faced another in a long series of setbacks recently when three of the city's largest landlord organizations filed suit asking for a 7.5% rent hike for the one million tenants who have not received computerized rent orders.

A similar suit last year resulted in a 15% increase for tenants whose rent levels had not been set by the computer.

The landlords charged the city's administration of the rent control program had fallen apart and demanded that the system be taken out of the city's hands.

Meanwhile, the rent operation was attacked from another front recently when a special state report blasted both landlords and the rent control operation.

The state commission, headed by lawyer Stuart Scott and requested by Gov. Nelson Rockefeller, called the overall management of the computer-

ized rent program a "failure."

In the past landlords have charged that the computerized system had delayed rent increases that were due to them, but the Housing and Development Administration charged the delays were due to faulty input from the landlords themselves.

The commission charged that implementation of the computer systems had tested the capability of the housing administration and found those capabilities "wanting."

The delays in getting out the notices for increased rentals upset "the expectations of tenants, landlords and building employees resulting in legal snarls, makeshift arrangements and exacerbated tenant-landlord relations," the commission found.

But at the same time, the report placed some of the blame on the landlords, noting the city grossly overestimated the "city's ability to get reliable and accurate information from landlords."

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\*EDP Analyzer, October 1972, That Maintenance "Iceberg," P.1. (Send for complimentary copy.)



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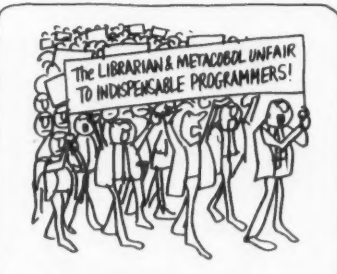
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## Minicomputer Takes the Driver's Seat

NEW YORK — In an effort to correct frequent and costly human errors, the Ferrari racing team is using a minicomputer to accurately evaluate its position in each race.

"At the Indianapolis 500 this year, five recordkeeping errors on the part of the officials changed the finish position of 23 cars," commented Dr. Ennio Gheradi, manager of Ferrari's factory racing team.

"And at the Pocono 500 in August they had the wrong driver in the winner's circle until they found their error," he said.

From these and other experiences, Ferrari decided to modernize its own timekeeping function with a PDP-8/L mini.

Using the mini, the Ferrari team keeps track of eight cars plus the leader, and can, at the completion of each lap, get a printout of number of laps com-

pleted by each car, the time it took to complete the last lap and the number of laps and time (to the msec) that the car is behind.

This data is produced by the mini in response to the button-pushing of one person who is equipped with a 12-key button pad. He observes the race and presses the appropriate button whenever a car passes a certain point on the course, makes a pit stop or resumes racing.

The new system has already shown positive results as several times during one endurance race officials kept telling the Ferrari team it was a lap behind, but the computer printout showed it ahead.

"If I had listened to the officials instead of the PDP-8, I might have pushed the cars too hard and broken them down," a



Ferrari team driver Sam Posey studies lap count and time data from a PDP-8/L minicomputer. Ferrari official explained.

As it was, the Ferrari team won the race.

## 'Damn That Decibel Dementia'

EAST LANSING, Mich. — The word "pollution" usually brings to mind visions of black smoke, oil slicks or mounds of garbage along the highways. But another kind of pollution — noise pollution — can be just as serious a problem, especially for large manufacturing industries.

Merritt Enterprises here is applying computer technology to help diagnose and control "decibel dementia." By using a computer graphics technique, explained Donald Merritt, concentrations of noise in various manufacturing operations are located and a contour map is made showing location, origin, radiation, extremes and characteristics of the noise.

The company can then take the necessary steps to improve the working environment in compliance with Federal Occupational Safety and Health Laws.

It takes about five days to survey one million square feet of space in a manufacturing facility and another four or five days to assemble, interpret and feed data into the computer.

Merritt has done these studies for several automotive concerns, including General Motors and Ford Motor.

## Recount Avails Nothing

THURSTON COUNTY, Wash. — Two contested computerized elections had some tempers flaring here recently but a recount settled the matter.

Following the November elections, Orville Armstrong, who ran second to George Yantis for county commissioner, asked to have the election recounted. The county canvassing board then asked for a total computer recount of that race and a second senatorial contest.

County Auditor Wes Leach agreed to do the recount but said he wanted the court to authorize him to do the recount and to approve expenditure of the necessary funds.

In the interim Armstrong charged undue delays in getting the votes counted. He claimed there was no "expenditure" problem since the programming for the recount had been donated, the paper donated and costs of computer time were estimated at only \$200. Armstrong noted he had posted \$675 to have the vote recounted.

Leach said a hand recount was done with a one vote difference noted at the end of 49 precincts. Nevertheless, a computer recount was done. The result: no difference from the original election.

Sorry, Orville.

## NYC Combing Streets For Maintenance Data

NEW YORK — Currently some 90 highway department employees are combing every street of the five boroughs of this city to prepare "the most extensive inventory of street and highway information of any city in the U.S."

The aim, according to transportation administrator Constantine Sidamon-Eristoff, is part of Mayor John Lindsay's plan to "facilitate a vastly improved street maintenance system by feeding the information into a computer."

"The information that will be gleaned from this comprehensive survey will enable the city to plan resurfacing on a scientific basis," Sidamon-Eristoff said. "Also, it will make it easier to check on pothole repairs and street cuts by utility companies and city agencies."

## State Registry Proposed To Reduce Welfare Fraud

NEW YORK — A proposed relief unit of the New York State Department of Social Services — the Public Assistance Service Corp. — would incorporate a central computer registry system statewide to clear and control welfare applicants and recipients.

The state welfare inspector general and developer of the plan, George T. Berlinger, said the computer system would reduce fraud and abuse by continuously checking its files against other records and by initiating a checkless system with local banks, saving check-preparation and mailing costs and preventing lost or stolen checks.



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## California Users, Vendors Still Wonder

# No One's Certain About Software Tax Interpretation

By Marvin Smalheiser  
CW Correspondent

LOS ANGELES — The crisis last year over the taxing of software in California appears to be returning to plague computer users, hardware and software companies and tax officials.

Emergency legislation enacted late last spring to exempt certain software from taxation has subsequently been interpreted by state tax officials in a way that has some computer users and companies wondering whether the tax exemption has been neutralized.

At least one state association, the Western Electronics Manufacturers Association (Wema), has begun drafting legislation to eliminate or minimize the taxation of computer programs in the state.

Several users and software companies are already predicting that the issue will eventually have to be decided in the courts.

At the heart of the matter is whether software is tangible, personal property and thus taxable as personal property.

And if it is, as the state contends, then how is its value established?

The issue in California is cited as crucial nationally and related to the recent Supreme Court ruling that software constitutes ideas and is therefore unpatentable.

### 1970 Precedent?

Opponents of a software tax have been quick to cite the Supreme Court case and the 1970 District of Columbia case in which software was ruled intangible and exempt from *ad valorem* taxation.

In California, legislation sponsored by Assemblyman Joseph A. Gonsalves (D-La Mirada) was thought to exempt most software for 1972 and 1973.

But at a recent hearing in San Diego on future software legislation, according to testimony the law has been interpreted in

such a way that significantly alters the original concept of the exemption.

Jim Case, president of Dylakor Computer Systems, testifying on behalf of Wema, urged that the state legislature should enact a statute exempting all software from property taxation.

At the very least, Wema said, the current law should be extended as is, with a more equitable definition of basic operational programs.

The current law states that basic operational programs are taxable because they "are like law books or other standard reference books and have value which is measurable."

The definition of basic operational programs was left to the state Board of Equalization (BOE) which decided they are computer programs which are "fundamental and necessary to the functioning of a computer."

Application programs were not con-

sidered as basic operational programs, but computer industry representatives have argued that the line between the two is fuzzy at best and unworkable for tax purposes.

Another source of dispute is a related BOE rule which says that software is tangible property and is subject to property taxation in the same manner as other tangible property.

Both rulings have prompted vigorous opposition from Wema, which feels computer programs are ideas and thus not taxable. It claims the definition is ambiguous.

Ronald B. Welch, the BOE's assistant executive secretary for property taxes, said he was disappointed by the opposition since he felt major efforts had been taken to work out difficulties with computer experts beforehand.

"We have done the best we could. A complete and unmistakable definition of basic operational programs is virtually impossible," Welch said.

The BOE, Welch said, would like to see the present law extended for three years "as is" until the problems can be studied further.

But the California Manufacturers Association (CMA) and several aerospace companies have sought to clarify the situation.

William B. Sprague, assistant treasurer and director of taxation for the CMA, said the group wants to eliminate all tax provisions affecting in-house software programs.

According to L.W. Haire, corporate director of Computer and Communications Planning for Lockheed Aircraft Corp., Burbank, "The whole field of software is such a morass of intangibles we don't think you can ever write a law that can define it reasonably well."

John Bennett, vice-president of information services for Transamerica Corp., Los Angeles, said he doesn't see how an assessor can establish the value of programs.

"They are in a continual state of change... some are well done, some poorly done."

Evan Linick of Informatics, Sherman Oaks, Calif., a software house, said the way in which the BOE has worded its rulings will "cause us a lot of confusion. People won't know what to do."

Lester L. Kilpatrick, president of Calcomp, said it is "dangerous when taxing agencies start taxing intangibles and value is so much a matter of opinion."

Software, he noted, is so intangible, so difficult to interpret, it causes confusion.

Orange County, like most of the counties in the state, has been taxing bundled software. But it has also assessed and taxed as personal property the application programs created by Calcomp for the past three years.

Jack Vallerga, Orange County assessor, said the county is keeping an open mind on the taxing of software.

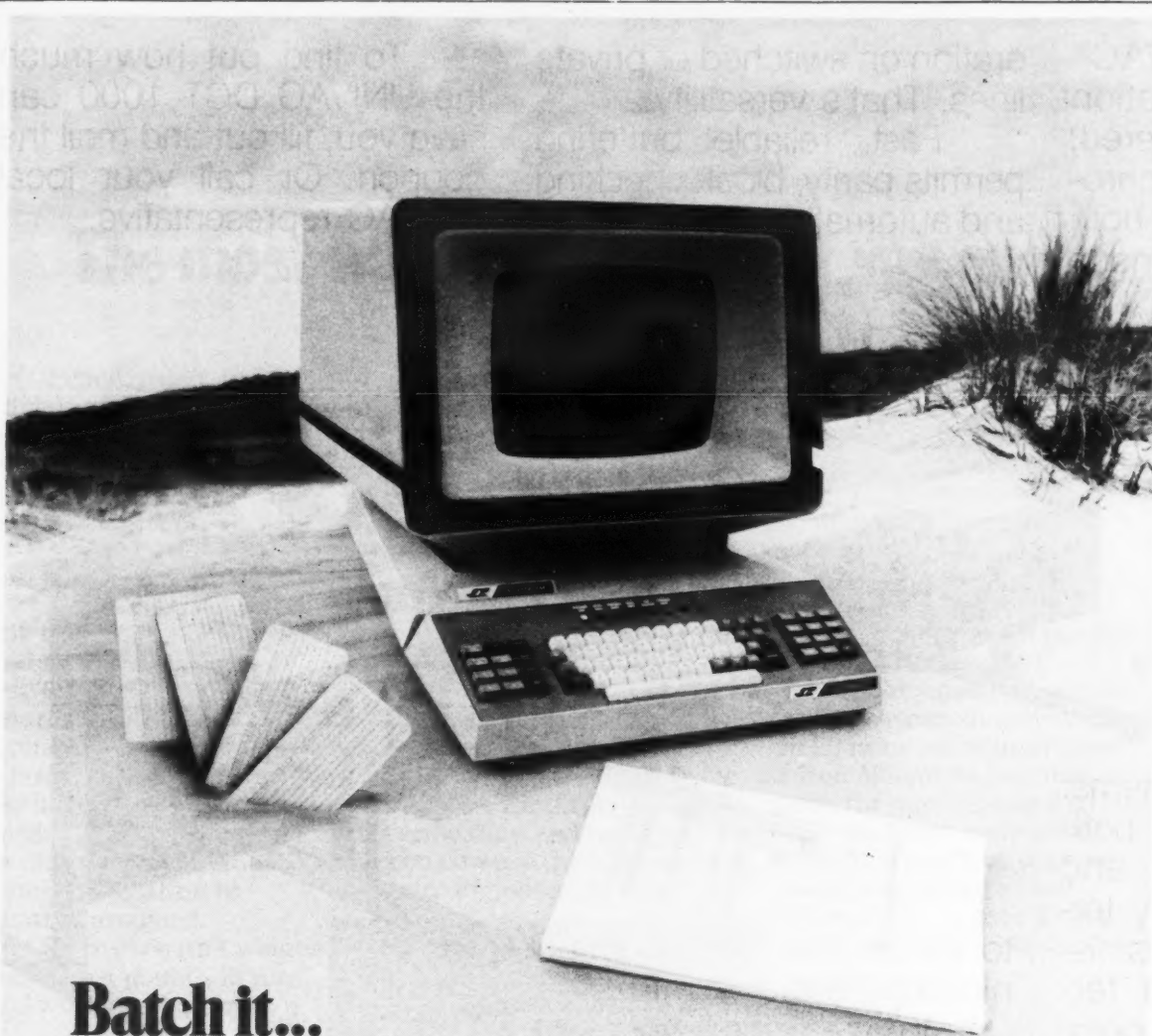
"We're not making a decision until the March lien date," he said.

## More Trouble Ahead?

MIAMI BEACH — The winter conference of the Association of Data Processing Service Organizations (Adapso) has been warned that states may turn to taxation of software in their search for new tax bases.

Paul Rosenthal, chairman of Adapso's California Software Tax Committee, told the conference that the California experience could foreshadow actions of the taxation authorities in other states. He suggested that the data processing industry must be prepared to testify in its own behalf on short notice at statewide taxation hearings or face serious financial consequences.

The California experience, Rosenthal said, was valuable since the very real possibility existed that companies would move their business to other states where no software taxation is in effect.



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## News Wrapup

### Computer Aids Police In Hit-Run Search

DETROIT — A computer in a state office is helping local police track down a car suspected of being involved in a hit-run accident here recently. Witnesses told the police the car's license number contained the letter "F" and the numbers "6" and "1." This information was fed into the computer in the registration section of the secretary of state's office. The computer came up with 4,400 registrations.

Inspector James Martin, head of the Detroit accident prevention section, said they have narrowed the list down somewhat but it may take a month to check out all the possibilities.

He indicated the car described by witnesses may not have been the only car involved in the accident which killed a family of five.

### N.Y. OTB Hopes Amtote Will Triple Phone Accounts

NEW YORK — The final award of the off-track betting contract to American Totalisator Co. [CW, Feb. 7] had some additional benefits for the telephone accounts branch of the Off-Track Betting Corp.

Anticipating increased flexibility with the Amtote system, OTB hopes to triple the number of accounts handled by telephone, said Sid Gross of the special projects and telephone accounts office.

Formerly, Gross said, telephone bettors had to wait two days until deposited money was credited to their accounts. Now it only takes an hour; the bettor can make a wager the same day he deposits his money.

Under the old system, a potential bettor needed \$25 to open a telephone account; now he needs only the traditional \$2.

"We presently have 22,500 telephone accounts," he added, "and can handle another 40,000 bettors."

### Produce Growers Produce

DURHAM, N.H. — Vegetable and fruit growers who wish to make the most of the New Hampshire produce market can receive computerized assistance from the University of New Hampshire here.

Using a portable terminal and his own retrieval system, Dr. Sherrill B. Nott, economist in farm management, supplies growers with information about the volume of produce consumed by towns, cities and counties. He helps them plan how to capture the portion of the market which they can profitably supply and helps them estimate crop budgets.

Consumption data and sales patterns are available for 28 fruits and vegetables.

Some of the factors involved in Nott's analysis are the number of suitable acres available to the grower, costs of raising various crops and the profit margin based on the estimated market price.

*Pourquoi est-ce que je dois changer de langue?  
Il m'a pris dix ans pour apprendre celle-ci.*

(Why should I switch languages? It's taken ten years to learn this one.)

*Warum wird das EDP immer teurer?*

(Why is EDP getting more and more expensive?)

*Obsoleto? Vengo di comprarlo!*

(Obsolete? I just bought it!)

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courses, covering everything from fundamental computer concepts to sophisticated techniques and applications. Plus each course comes complete with workbooks, schedules and training guides.

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## Editorial

### Helping Oneself

The success of the Government's suit against IBM will partly depend on evidence of what are alleged to be illegal or anticompetitive marketing practices on the part of IBM.

If such practices do in fact exist, as the department alleges, then users should be the ones most affected by them and therefore should have the most knowledge of the practices.

Users who feel IBM is a monopoly which has used its market power to injure them can therefore do something about it.

They can inform the Justice Department of instances where they feel they have been injured by illegal or pressure marketing tactics.

If in fact IBM has been a monopoly and has been charging high prices because of this position, then users can collect damages for the amount extra they have been charged.

By helping the government, users might also be helping themselves.



'Now that we've selected a new computer, can we have the DP department's recommendation by the 15th, Hoskins?'

## Letters to the Editor

### About That VS Support — It May Not All Be So Good

IBM's announcement of VS support on its Series 370 provides interesting food for thought.

The alleged reasons for providing this enhanced capability are to make more efficient use of core memory, provide better utilization of the system resources and relieve the programmer of the burden of controlling the size of programs to fit in available memory.

What is thus likely to happen is that users will be tempted to upgrade to a 370 configuration to take advantage of these virtual enhancements. This could be a costly error.

It may well be that the new models offering VS support will provide more efficient use of the system resources, but it is also possible that a reduction in performance may result.

Unless careful control is exercised on virtual operation, a degradation in performance could easily result from excessive paging (thrashing) and cycles of activation/deactivation.

The programmer's task may become more complicated, for now programs must be carefully structured in order to fully realize the benefits of virtual operation. JCL has increased, significantly adding to the programmer's burden.

The operator's task has also become more complex and it is likely that more operators will be needed to ensure the smooth running of the system.

Without doubt, the announcement of VS support will have an adverse effect on those companies producing software now provided by the DOS/OS "standard" VS system. The need to add core memory may also diminish for users of VS systems.

Only time will reveal IBM's true intention of reducing constraints imposed by

system hardware by offering virtual storage to the DP industry.

Jagjit Singh

San Francisco, Calif.

### Why Not Take Some Time For Honest Self-Evaluation?

J.T. Rigo's letter regarding the CDP [CW, Jan. 24] is the same old, tired argument offered by many people in many fields for many years. I'm sure the accounting field, CPAs and the insurance actuary society had their problems when they attempted to have individuals in the field prove their professionalism.

Those who are privileged to wear the CDP key can say, "At some time in my career, I voluntarily submitted myself to a measure of my professionalism." Those who have not sat for the CDP can scoff and sneer just as the blacksmiths did who were convinced the automobile was not here to stay.

Since my first exposure to computers, in 1946, I've seen a lot of so-called hot-shot professionals; many who were hot in the sixties are mighty cold today.

Maybe if they had taken a little time for honest self-evaluation and submitted themselves to a test of their degree of professionalism, we in the industry wouldn't be submitted to much of the justified criticism we receive today.

C.W. Davies Jr., CDP

El Paso, Texas

### Young DP Professionals Very Socially Concerned

Regarding Richard Fyfe's Jan. 24 "Viewpoint" article:

First of all, while it is true that the data processing industry has been a leader in allowing the entry of minority group personnel into its ranks, the majority of user organizations continues to demonstrate a lack of courage in its middle- and upper-level management selection.

This is true, not only in Joseph Rigo's "rockhide-bound" banking industry where, incidentally, tremendous strides have been made, particularly in the huge New York City institutions, but of virtually all major industry groups. Certainly all of us in the DP industry must accept the challenge and responsibility for that situation.

Secondly, Fyfe asks: "Since when is it the responsibility of a particular profession to take upon itself social challenge?" My question is, "Is he really proposing that we leave the social challenges to the

sociologists, lawyers and politicians?" The rationalization that we are merely "responsible for handling and analyzing data, . . . not the cause . . ." conjures up some thinking of the early 1940s that is downright frightening to me!

Finally, I would say in our firm's experience we have found the young DP professional to be highly motivated by social concern. What is even more encouraging is the willingness to articulate that concern where it affects them most — in their careers and pocketbook.

James B. Webber

Asst. to the President

The Berton Group, Inc.  
New York, N.Y.

### 'How Things Really Are'

Imagine what went through the mind of the judge who, having learned of the IBM-directed destruction of the CDC data base, read the following IBM advertisement in a news magazine:

"No one can take the ultimate weight of decision-making off of your shoulders. But the more you know about how things really are, the lighter the burden will be. IBM. Not just data, reality."

Stanley R. Zegel

Cedar Rapids, Iowa

### 'More Power to the 360!'

I found the Jan. 31 supplement on "The 360 Lives On" quite interesting and informative, and consistent with data I obtained in a recent study, i.e.:

	Performance Ratios	
	Computerworld	Littrell
360/30	1.00	1.00
360/40	1.25	1.30
370/135	1.69	1.60
370/145	1.75	1.70

In reference to the article by E. Drake Lundell Jr., even at IBM prices the 360/50 is only about 5% below the 370/145 in terms of price/performance.

R. Fred Littrell, Programming Mgr.

Division of Management  
Information Systems

State Board of Education  
Raleigh, N.C.

The article quoted a leasing company executive who probably stated the most ideal comparison. But you apparently agree users should consider a 360/50 before acquiring a 370/145. Ed.

### Filling In the Holes

I recently came across an article on the front page of the Jan. 24 issue on "370/115 Expected — at Under \$7,000/Mo." The article interests me and

my company very much.

I was unsuccessful in obtaining any information from IBM regarding this subject. Would you elaborate on this matter?

Anthony Chianese  
DP Manager

AAA Trucking Corp.  
Trenton, N.J.

We endeavor to provide users with the best available information from outside sources on equipment expected from IBM. IBM as a matter of policy does not provide information on unannounced products. Ed.

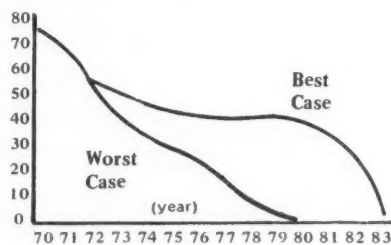
### Parenthetically Wrong

An article on predicted price levels of 360/30s and 40s in the Jan. 31 issue contained two graphs taken from the Readers' Report, part of the Computer Price Guide. The phrase "(\$ in thousands)" along the ordinate of the graph was added after it left our office. This phrase completely destroys the meaning of the graphs, since the trend lines represent percentage of list price over time, and not actual dollars over time.

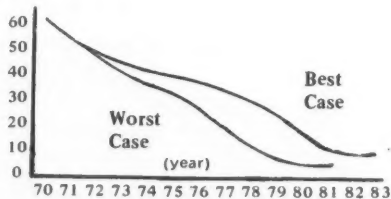
William P. Hegan  
President

Time Brokers, Inc.  
Elmsford, N.Y.

The graphs are reproduced here correctly. Ed.



Forecast of 360/40 Price Levels Expressed as a Percentage of List Price - 1973 to 1983



Forecast of 360/30 Price Levels Expressed as a Percentage of List Price - 1973 to 1983





## 'Greatest Opportunity Ever'

# Computer Foundation Can Bring Order to DP Profession

The plan for the Computer Foundation released recently by DPMA's John Swearingen and ACM's Fred Harris represents the greatest opportunity ever given to a growing profession to establish order in the profession.

If we DPers do not succeed in straightening ourselves out with this plan, supported as it is by our two largest professional organizations, I shall be most disappointed.

But I believe we will succeed, and the historical dates of the establishment of the Certification & Testing Advisory Committee (C&TAC), the Swearingen & Harris proposal, and the successful incorporation of the foundation under broad-based control will be to data processing professionalism what the 1952 Census Bureau's installation of the first Univac machine was to computer hardware.

Our first thoughts must be to express our gratitude to those whose actions over the past years have made this opportunity possible. To DPMA and ACM leaders for melding the ideas of two such different organizations into a common policy... To the members of the C&TAC, who laid down some of the major principles. All need to be thanked by word, but even more important and long-lasting, by action.

### The Taylor Report

By  
Alan Taylor, CDP



It is the actions of the data processing profession during the next few months that will decide the structure of the Computer Foundation. This structure is being designed to contain not only the certification programs currently being handled by DPMA, but certification of practitioners in other areas.

It is being designed to handle precertification research on certification criteria. It is also being designed to handle the research into data processing standards.

In general, the foundation is going to be designed to handle the most important professional activities.

#### Unique Opportunity

In other technical professions such as engineering, such opportunities for collaborative work have either never occurred, or if they have occurred, have not been accepted. Engineers are now accustomed to dealing with numerous bodies each running their own programs.

As Dave Goldman, a friend of mine who serves on some of the professional engineering societies said recently: "No one is prepared to stop what they are doing, so we just cannot get them together."

His is a very understandable attitude and one which is defensible. Each of the various engineering areas does have its own needs and its own responsibilities which only its practitioners really understand.

The language the different areas speak and the items they discuss may be the same, but the related responsibilities they have may be as different as a discussion of diagnostics between a

compiler designer, and an on-line systems shift-leader. Under the C&TAC concept this disparity in professional outlooks will be managed by providing the various societies with their own equal voices.

I cannot pretend that everyone likes this method. Frankly, some members of the Society of Certified Data Processors have told me they think a foundation whose primary immediate activity is carrying on the CDP program should give a much stronger voice to the CDP holders than to other societies.

I see the CDPers' point and, as far as these particular programs are concerned, some stronger voice for the particular society may well be warranted, but only in the particular program.

What is really important is the profession. The profession of data processing, in all its diversity, is much bigger than any single program—even one as outstanding as the CDP. In the Computer Foundation program all professionals can be interested and active.

The time to be professional is now and the way to do it is to support the professional society or association of your choice, telling them what you want your profession to be.

There are many societies, but some which have already indicated support of the foundation project are listed in the adjacent table, together with brief details of membership qualifications and interests. At the top of the list you will find the two societies, ACM and DPMA, who have started the ball rolling. Following them are the societies who are now ready to pick it up.

I suggest you look over the list,

make up your mind about which you feel can most represent your professional interests, and join today if you are not already a member.

Don't forget to make whatever comments on how you want your profession organized. The societies certainly need your support, and can profit from

your opinions on how this great opportunity should be exploited.

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## Professional Groups Support Foundation

The following professional societies have expressed support for the Computer Foundation.

#### Data Processing Management Association

Membership open to data processing professionals and those in associated occupations, with some restrictions. Annual national dues \$25, local dues \$5-\$25.

#### Association for Computing Machinery

Membership open to college graduates and those with 5 years DP experience. Annual dues \$35, no local dues.

#### Association of Computer Programmers & Analysts

Membership open to programmers and analysts. National dues \$15-\$35.

#### Society of Certified Data Processors

Membership open to CDP holders. Annual dues \$20.

#### Society of Data Educators

Membership open to data processing teachers, and those interested in data processing education. Annual dues \$12.

#### Society of Professional Data Processors

Membership open to practicing data processors and data processing instructors. Annual dues \$20.

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## Churches Will Work on Ethical Issues

About one month ago I suggested in this column that technically competent people might like to volunteer for service on committees to advise various religious groups on the existence of ethical problems, such as privacy, in the data processing area.

Most of the comments received stated what their particular denomination was and that the respondent would be happy to serve on committees warning of data processing dangers.

Altogether, nearly two dozen denominations now have people available who can advise them on the technical problems involved in computer ethical standards. These include: United Pentacostal, Roman Catholic, Conservative Baptist, United Methodist, Episcopalian, Southern Baptist, Religious Society of Friends, Evangelical Free Church, Christian Church Brotherhood, United Church of Christ, Buddhist, American Baptist, Presbyterian, Christian Scientist, Baptist, Lutheran (Mo-Synod) Unitarian, Assembly of God, Unitarian/Universalist, Reform Jewish, International Church of Four Square Gospel, Plymouth Brethren and United Pentacostal.

More volunteers in these and other denominations are most welcome. Please send your name to Alan Taylor, c/o Computer-

world, 797 Washington St., Newton, Mass. 02160.

#### Some Reader Comments

"I am aware that the Dec. 22 Taylor column is concerned primarily with areas in standards and the public interest.

"However, as in the case where

### The Readers Respond

American Express Credit Card holders are represented by the American Express Co., the churches themselves may have computer systems in their backgrounds of which the congregations know nothing.

"Large denominations such as the Roman Catholics and Mormons are extensively involved in private enterprises. Local ministers and local congregations would be fine for this service; bishops and higher I would not trust with the service" — Felix A. Beiner, Riverdale, Ill., project manager, Roman Catholic.

"Will work on committee or research and write up results" — Sidney W. Frost, San Antonio, Texas, criminal justice consultant, Episcopalian.

"I am a certified director of Christian education" — B. Frank Mattes, Wooster, Ohio, DP instructor, United Methodist Church.

"Willing to help all denominations as I consider us all brothers in Christ" — William A. Pease Jr., Charles Heights, S.C., senior programmer analyst, Southern Baptist.

"I'm not sure I understand all the implications of your article, but I am willing to do what I can do for my church and DP" — M. O. Cantrell, Tyler, Texas, DP manager, Southern Baptist.

"I'm interested in all levels of privacy" — Irvin F. Charpiot, St. Louis, Mo., analyst, Christian Church Brotherhood (Disciples of Christ).

"Will be willing to work on a committee, area of interest is varied; from standards to data use" — Donald R. Diesel, St. Louis, Mo., supervisor/computer specialist, United Church of Christ.

"We at the church have already discussed something like this, but nothing yet existed on paper. Please keep me informed about current status. I would like to help, although my time is somewhat limited" — Norman H. Swirin, Los Angeles, Calif., software programmer, Unitarian/Universalist.

"The prophetic tradition is one of scrutiny of authority and insistence on action for the common good. Count me in" — Norman Weinberg, La Grange, Ill., director of computer services, Reform Jewish.

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## Keep IBM Together, Protect User

By Wesley T. Saville

Special to Computerworld

Break up IBM? Nonsense. From a shortsighted point of view and on the surface it may seem a good idea. But breaking up IBM would hurt the consumers, mainly the ones in the outlying areas of the U.S. and the world. IBM will support and service each and every consumer regardless of location if it has to go via kite. IBM acquired its market through support and service in addition to its well-trained marketing force.

So you will not think I am biased I must point out that at present I have in-house five computers; one large and four medium systems, none of which is IBM.

During my over 20 years in the DP business, however, I have used much IBM equipment. In support, service and knowledgeable intelligent marketing, IBM is far superior to the other manufacturers.

## Selling Solutions

What really makes IBM different and number one in the industry is that it sells solutions; it solves problems; it believes it is in business to keep the user in business; it (from top to bottom) works

hard to make certain the user is a satisfied customer; its support people are good to outstanding idea people; and, further, it has by far the very best documentation and training in the industry.

IBM is successful because its personnel have the proper attitude of being customer-oriented; in addition, its people who interface with a customer

## Viewpoint

know their jobs from A to Z. It is not IBM's processors which put IBM in first place by a large margin, but its people which include management — i.e., chairman of the board, president, executive vice-presidents and down to the floor sweeper.

I have not mentioned IBM hardware and software mainly because I don't believe it is the heart of the crying that is going on in the industry. There is nothing as great as success which IBM has had from the very beginning of its existence. It is mainly the unsuccessful or not so successful who claw at and resent the highly successful such as IBM.

## People and Pride

Most of the computer manufacturers have processors as good as, better than, and far better than IBM's. IBM's processors are good, but not outstanding; however, they will do the job they were meant to do with ease. Again it is IBM's people who put it far ahead in the industry. There is a pride these people have; a pride of being part of IBM, and as a result, this pride drives them to achieve certain standards and goals.

IBM's peripherals are probably the best in the industry; if not, then they are second to no other manufacturer.

Breaking up IBM would be disastrous to the computer industry and the consumer alike. Equipment prices would get out of hand; software prices would go up, support and services would deteriorate because there would be no need for the other companies to try to compete with IBM.

Service and support for the multitude of consumers (users) of computer equipment is a must. IBM's competitors of all kinds are, in desperation, trying to service and support their customers — with most not doing a good job. With IBM split up, the results for non-IBM users would be disastrous and in time the same would be true for every user.

The name of the game is service and support which is done by people, not computer equipment.

People with the proper customer-oriented attitude and pride — that is IBM.

Univac is in fast pursuit of a highly improved image; doggedly and persistently moving toward a strong position in the industry. Its top management is dedicated to building Univac and improving its support and services. Further, it is doing just that in a quiet but forceful manner.

The Univac face is being remolded from within by a strong forceful leader who knows precisely what he is doing; and what's more, he is moving ahead. Not wasting his time over the "wishing well." Univac is competing in the American way of free enterprise; a foundation block of our country.

The "wishing well" crybabies had better step back from the well and go to work. Wesley T. Saville is president of RN-AAA Co. Inc., Chicago.

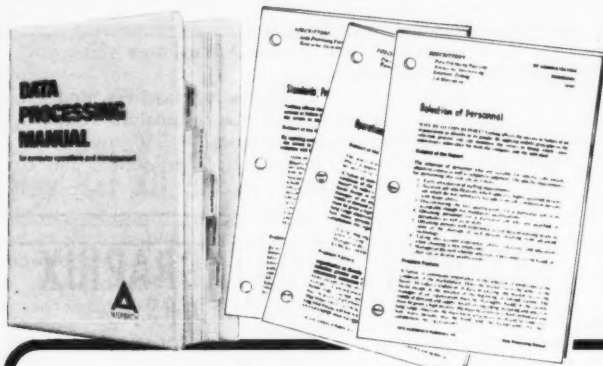
## Police Aim to Buffalo Crime

BUFFALO, N.Y. — This city's newest police department unit — Preventative Patrol — is directed by a computer.

The unit consists of 20 patrol cars financed by federal funds. The computer determines the high risk areas — where and when robberies, burglaries, assaults or auto thefts are most likely to occur — and assigns the cars accordingly.

The unit recorded its first success recently with the arrest of three Rochester residents on drug charges.

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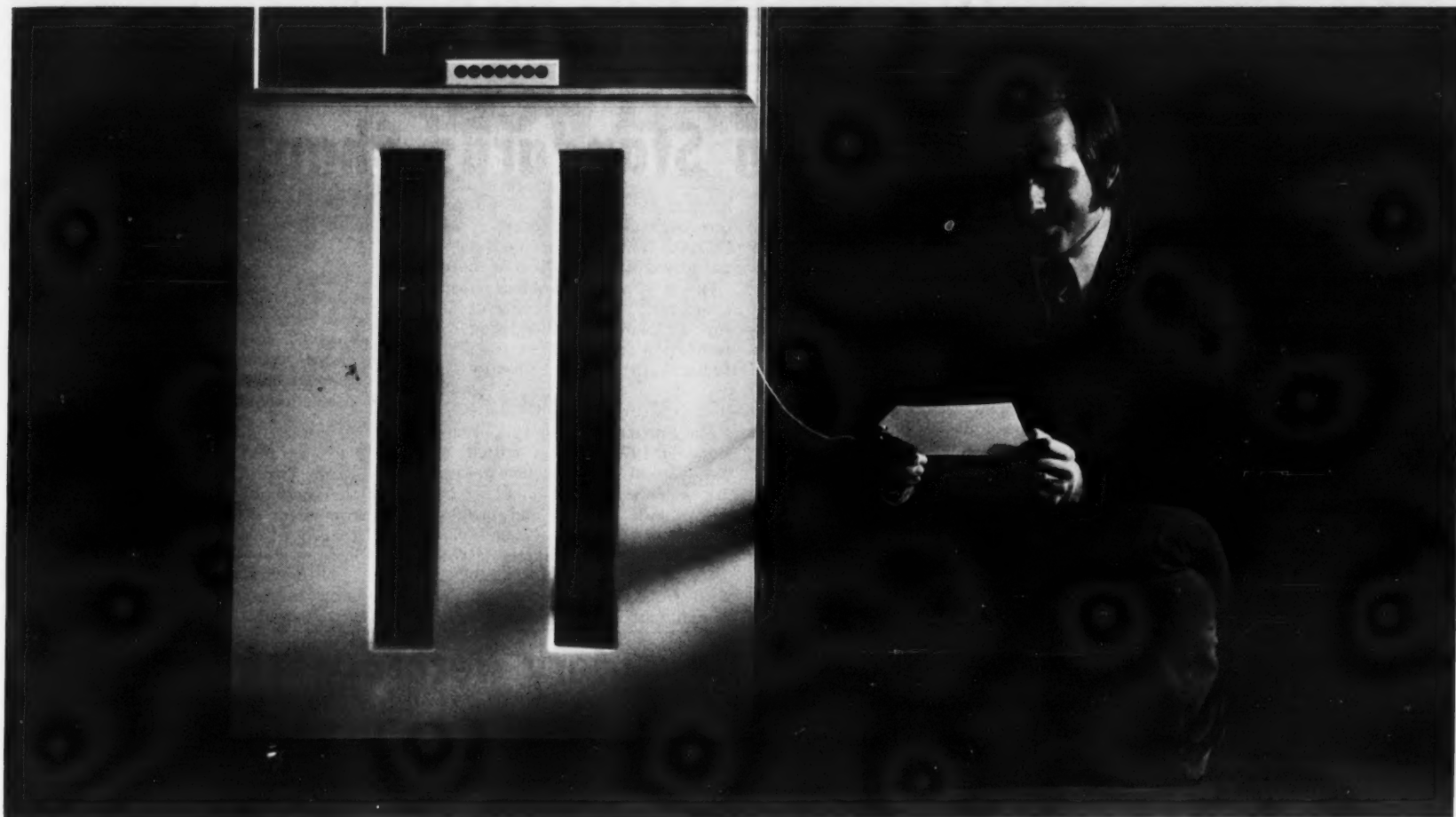
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## Random Notes

### Beloit 'Foresight' Version Lets Users Play 'What If?'

BELOIT, Wis. — An enhanced version of the Foresight financial modeling system is now operational through the Beloit Computer Co. BCC/ATS remote terminal computer system.

All business situations that can be expressed by a combination of lines and columns of data can be processed by BCC/Foresight, the company said. The system includes a statistical analysis capability allowing "what if" testing of possible actions. Beloit service is available through much of the Northeast and Middle West, from One St. Lawrence Ave., 53511.

### New Round of Upgrades Planned For Series 70 VMOS, TDOS, DOS

CINNAMINSON, N.J. — Shortly after the release of TDOS-22 — the seventh update of operating system software made available to Series 70 users in the one year Univac has had the old RCA user base — the company announced its plans for the next round of improvements.

VMOS-10, including support for new tape and disk subsystems and better catalog management and space allocation, is to be ready in September. TDOS-22A, planned for August release, will permit 13 concurrent application programs. DOS-16 should include dynamic allocation of disk space. It will be ready in November.

### Bonds, Coupons Validated

NEW YORK — Financial accounting agencies can validate bonds and coupons submitted for payment, and monitor which envelopes of expired bonds can be destroyed safely, with the Automated Coupon Paying/Cremation System from Franklin Computer Associates.

The system checks incoming items against stop orders and the possibility of duplicate numbers, as well as basic issue identification. A full range of management reports is included in this \$25,000 package, which is written in Cobol and runs in 100K bytes under OS/360-370. Franklin is at 80 Pine St., 10005.

### Engineers Can Air Their Needs

SYRACUSE, N.Y. — Consulting engineers are using teletypewriter links between Carrier Air Conditioning agents and the company's home office to review several alternative selections of equipment proposed by the computer to meet the consultant's specifications.

The proposed equipment lists and supporting information are generated overnight at Carrier's offices and sent out so the engineer has the data within 24 hours of his original request. The company is in the Carrier Tower, P.O. Box 1000, 13201.

## Cobol Climax

# PL/I, Fortran Standards Shaping Up

By Don Leavitt  
Of the CW Staff

WASHINGTON, D.C. — With the public comment period on the revised Cobol draft standard ended this week, there have been few enough comments so that American National Standards Institute (Ansi) Technical Committee X3J4 Chairman Robert Kearney of Bell Labs foresees the final draft going out for letter ballot and approval this summer.

But Cobol isn't the only language being subjected to standardization procedures this year. A revised Fortran, updating the original 1966 standard, is expected to be ready for public comment by the end of July, according to X3J3 Chairman Frank Engel, an independent consultant.

### PL/I Under Scrutiny

An original standard for PL/I — only now beginning to emerge from its IBM-only image — is being developed jointly by Ansi and by a technical committee of the European Computer Manufacturers Association (Ecma). The work is on schedule: an international draft standard should be completed and a public comment period started by the end of the year, X3J1 Chairman Mike Marcotty reported from General Motors Research Labs.

The possibility of starting formal standardization of Basic is still under study for Ansi's Standards Planning and Requirements Committee (Sparc) by an ad hoc group headed by Prof. Thomas Kurtz of Dartmouth, one of the codevelopers of the language.

Comments on the Cobol draft ranged from corrections of typographical errors and questions about the meaning of specific sections to substantive points and proposed extensions. The latter can't be

handled by X3J4 and are forwarded to the Programming Languages Committee (PLC) of the Conference on Data Systems Languages (Codasy), Kearney noted.

The most serious problem raised in the comments, he added, concerns the need for a clearer collating sequence/code translation facility. X3J4 has asked PLC to handle this request on a priority basis.

### Fortran Late

The Fortran updating should have been done in 1971, Engel admitted, but said the current work includes several enhancements while maintaining compatibility with features and facilities that were part of the earlier standard.

Marcotty's X3J1 committee has based its work on the original specification of PL/I from IBM but, with its European counterpart, is combining the language

definition and standardization processes. With Cobol, these are divided between PLC and X3J4.

The PL/I group has published working papers (entitled Basis/1) and version 8 is available in limited quantities. Marcotty is reluctant, however, to send copies to anyone except the seriously interested compiler builder, for example, who might be able to contribute to the project.

Consideration of standardization for Basic was first proposed about two years ago by Prof. J.A.N. Lee of the University of Massachusetts. The Kurtz-led ad hoc committee is expected to approve the concept of a standard Basic, but its report has not yet been received, according to X3 Secretary Robert Brown, director of standards for the Computer and Business Equipment Manufacturers Association.

## Inventory Recordkeeping Linked To Other Accounting Operations

BIRMINGHAM, Ala. — Corporations with multiple units reporting at the division or lower levels can systematize reports on parts, supplies and finished goods, and link these functions with other accounting operations, through the Inventory Recordkeeping System from Computer Wares, Inc.

The package is part of the Computer Wares Automated Total System (Cats) which supports the buildup of various interrelated applications — including accounts receivable and general ledger — around a Cats master controller/scheduler program.

Cats-I/R maintains perpetual inventory records for a large number of high- or low-value items, with an accuracy and low cost that cannot be matched by manual operations, the company said. After editing input transactions and printing an error list, the system prepares a daily transaction list showing beginning and ending balances of all changed items.

### Order File Created

As part of its buildup of historic data, Cats-I/R creates a purchase order file and will generate appropriate purchase orders as stock of individual items drops below predetermined reorder points. The system also monitors fulfilling of issued POs, so that management can concentrate on exception situations.

Periodic Inventory Status Reports show on-hand, on-order, order point, order quantity, vendor number cost and promised delivery period for each item supposed to be in stock.

The printout can be even more detailed for each item; at the same time, the report can be limited to just active or just inactive items.

Working through the Cats Master controller, the Cats-I/R user can update his receivable and general ledger records, for example, as automatic byproducts of his work in inventory.

Cats-I/R and the master program, distributed as part of the inventory system, are designed to run on 360/370 equipment in 32K under DOS or OS. The package is available for \$5,000 under a perpetual license agreement, or for \$175/mo under annual lease arrangements.

Computer Wares Inc. can be reached through P.O. Box 31205, 35222.

## 'TIC-1' Puts DP Library On-Line

MOHAWK, N.Y. — There is, by the nature of what they are trying to do, a similarity among all tape library control packages, but Advanced Digital Systems' Tape Inventory Control software (TIC-1) differs from most, according to the developer, by being an on-line system.

The files used by TIC-1 are updated by control blocks within OS/360 as tapes are requested and dispatched. The status of any given tape is available not only through fairly conventional reports, but in response to inquiries from the computer console or a remote terminal.

There is no limitation on label types supported by TIC-1. Non-standard labels, non-label and bypass label situations are handled on a file maintenance or console key-in basis.

Additions, changes or deletions can be made by the operator to supplement data gathered by the operating system itself,

and the operator can work through either the card reader or a console key-in.

At the other end of the control cycle from data gathering and inquiry capabilities, TIC-1 includes an automatic dump of the disk-based master files to tape, for backup protection. This facility and the corresponding restore operation are, again, available to the user through a console key-in, ADS explained.

The management-type reports generated by TIC-1 include a job setup list and a tape release list along with a tape status report.

TIC-1 operates through any of the OS/360 options — MFT, MVT or VS — requiring between 9K bytes with the simpler systems and 17K bytes with the more complex.

The standard TIC-1 package costs \$6,000 and delivery is in 90 days from ADS at 146 West Main St., or P.O. Drawer D, 13407.

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## For 'Multics' Only

# HIS Unbundles Some Software, Training

WELLESLEY, Mass. — A Honeywell spokesman has confirmed that most of the language processors, and all of the training related to the Multics system [CW, Jan. 24] carry price tags of their own, apart from the \$3.5 million minimum cost of the 6180-based hardware/software Multics configuration itself.

Only the Multics operating system and the PL/I compiler system are bundled into the hardware system price. Everything else costs something, a departure from previous pricing policy, the company admitted.

The unbundling applies only to Multics, however, since it is a specialized system and likely to have a very select user base. Each potential user has different requirements, Honeywell said, and "it would be unreasonable to expect him to incur the cost of features he will not use."

Software and education for all other Honeywell systems continue to be fully bundled and the company has no plans to alter that position, a spokesman added.

Multics is expected to support Fortran, APL and

Cobol, as well as PL/I, the source code of the Multics software. Fortran and APL will cost the user \$350/mo.

A limited "single-segment" Cobol compiler will rent for \$100/mo under the Multics unbundling while a full "native mode" implementation of the business language will carry the same \$350/mo tag as Fortran and APL.

System features available separately include support for standard GCOS under Multics (\$500/mo); remote job entry (\$150/mo) and commercial file systems (\$110/mo).

Multics-related training from Honeywell includes an introductory course which will cost the user \$225/student, and a fundamentals offering, for \$525/student. The next step, an intermediate course, is priced at \$900/student, while an advanced curriculum carries a \$2,250 ticket.

The courses will range from three to 10 weeks, depending on the subject and the user's requirements. The training program is being managed by Honeywell's Phoenix offices, and the first classes will start this month in Cambridge, Mass., a spokesman noted.

PL/I training for Multics is to be offered for \$700/student. A course dealing with generic Fortran problems will be available without cost, but a class keyed to Multics-oriented specifics will cost \$80/student.

Manuals for use in these courses will be separately priced, and charges apparently will be made for CPU time if the training is done at Honeywell site.

The company apparently will provide any of this training at the user site provided at least 10 students are enrolled in each course, and the user pays the instructors' travel expenses. Extra students, beyond the initial 10, may attend for \$25/student.

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## 'Cips' Puts Many Files Into On-Line CIF

SCHILLER PARK, Ill. — DOS/360 banking users can now mesh multiple, conventional single application files into a centralized information file (CIF) for cross-application use, with the Customer Information and Processing System (Cips) software from Weiland Computing Group Inc. (WCG).

Key to the system, according to WCG, is the Cips data base, a multipurpose file that combines all descriptive data and account relationships for each customer into a single record. Any type of data can be stored in any format in this file, a company spokesman said, without concern for actual record layouts. Cross-referencing between the data-base records and accounting master files provides for retrieval of complete customer information from either direction, he noted.

The data base can be accessed from on-line terminals by name, any application account number or alpha-key, or from the batch or integrated application programs being run off-line.

Another module, the Cips Framework, includes logic and support for the Cips data base and application programs.

### 'Multiple Use Programming'

Non-monetary processing of the framework is done through "multiple use programming": root phase programs for maintenance, Edit, Sort and Update with application overlays. Other facilities include system control record generation, a master file reorganizing procedure and various utility routines.

The Cips On-Line Support System uses IBM's Customer Information Control System (CICS) line control conventions.

The minimum system — Cips Framework — is available on a permanent lease plan for \$20,000. The On-Line Support System may cost from \$10,000 to \$20,000 more, ACG said.

The company is at 4825 North Scott St., 60175.



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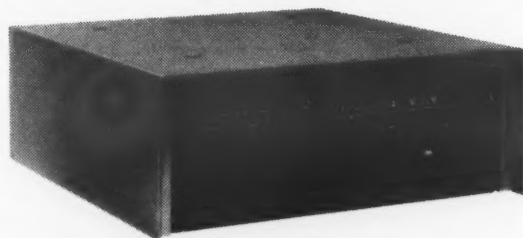


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## Data Briefs

### Data Services Report Lists TTY-Mini Interfaces

MAHWAH, N.J. — Western Union Data Services Co. has a technical report describing TTY interfaces for minicomputers, card readers, plotters and other DP equipment.

The interfaces can be used with Data Services Model 33 and 35 TTYs and the company's version of the GE Termit 300. The interfaces add from \$1 to \$10/mo to equipment rentals from Data Services depending on configuration, the company said.

Data Services is at 16 McKee Drive, 07430.

### Multiple Modems Aid Cluster Use

RALEIGH, N.C. — The Comware Division of Terminal Communications, Inc. has a multiple modem package for clustered applications.

The CW-120 unit provides mounting for up to 12 modems compatible with Bell 202-type data sets. It includes a redundant power system.

The CW-120 is equipped with control switches for analog and digital loop-back testing and power system monitor lamps.

Cost for the mounting rack or cabinet is \$660; each modem costs \$472. Terminal Communications is at 3301 Terminal Drive, 27611.

### ACT Speeds Terminal for T/S Use

NEW YORK — Advanced Timesharing Applications, a division of Advanced Computer Techniques Corp., is making available a high-speed terminal to timesharing users on an as-needed basis.

Service is provided on ACT's MDS 2400 terminal, manufactured by Mohawk Data Sciences, which operates in its own mode or emulates the IBM 2780 for input or output.

Terminal usage is \$24/hr, exclusive of T/S vendor fees. ATA is at 437 Madison Ave, 10022.

### Bank Welcomes Electronic 'Tellers'

HOLYOKE, Mass. — Community Savings Bank recently became one of the first financial institutions to install NCR 270 electronic teller terminals.

The bank installed four of the on-line data terminals which will be linked over telephone lines to a Century 200. The terminals will be used to process depositor transactions and to update accounts.

### GTE Offers Modem Rental

WHITE PLAINS, N.Y. — GTE Information Systems has a 12-month rental plan for its 103/300 modem line.

Costs run \$12.75/mo for the acoustic coupler model and \$89/mo for a 10-data set/master station configuration. GTE is at 4 Corporate Park Drive, 10604.

## TP User Links S/7 to 360 to Poll Net

### DP, Instrumentation Applications Handled

NORTON, Mass. — Fernandes Super Markets, a chain of 31 food stores and warehouses, has interfaced a System/7 with its 360/22 to handle both DP and instrumentation applications on one system.

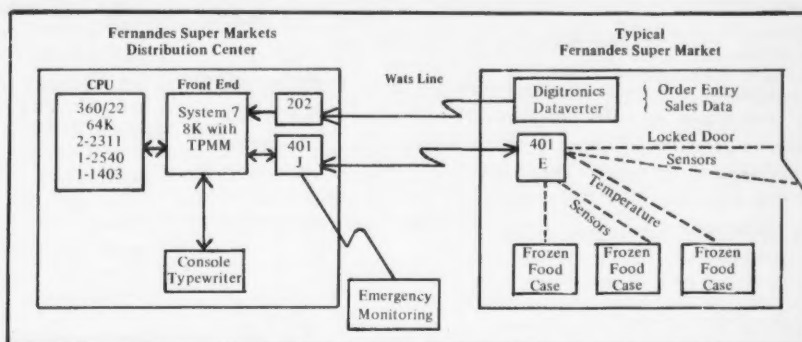
The company had a 360/30, according to Joseph G. McDonald, DP manager, and IBM recommended an upgrade to a 370/125. But instead, Fernandes installed a Model 22 because it had the "selector channel and storage protect features that we wanted," McDonald said. The storage protect was needed for a multiprogramming capability, he said.

The S/7 was interfaced with the Model 22 using the IBM Teleprocessing Multiplexing Module (TPMM), which is available as an RPQ with the S/7, the user said.

In addition to providing an interface to the 360, the TPMM also allows the front end to poll the Fernandes markets to collect orders and information on the previous day's sales.

Each store uses a Digitronics Dataverter to assemble data on tape for later transmission to the central DP site. "Each store has an appointed time when they call into the S/7," McDonald explained. A store order of 1,000 items can be transmitted within the basic three-minute dial-up phone rate, he said.

If the S/7 is ready to accept data, the operator at the store acoustically couples the Dataverter to the phone and the contents of the tape are transmitted to



System processes business data and also monitors cold storage and locked doors.

the DP center at 1,200 bit/sec.

In Norton the data is received through a Bell 202C data set and entered into the 8K S/7. From there it is entered into the 360 when files are updated, or as needed, McDonald said.

The S/7 will also be used to monitor the condition of cold storage lockers during nighttime hours when these facilities are unattended, McDonald said. The S/7 will poll a temperature sensor in each store at least once every two hours to be sure the perishable items are being kept at the proper temperature.

The S/7 will also act as watchman for the chain's stores. Sensors will be attached to all doors when the stores and warehouses close each evening. Any unauthorized opening of a locked facility will immediately send an alarm signal to the S/7 which will then print out a warning message on its console, McDonald said.

The sensors have not yet been installed, but they will probably be supplied by independent vendors. The 360/22 and the S/7 are leased from IBM, but the main-

frame has 64K of storage which includes a 32K add-on from Cambridge Memories, McDonald said.

The Model 22 costs about \$1,500/mo and the S/7 costs about \$1,700/mo including \$320/mo for the TPMM, McDonald said.

### Interface '73 Set

DALLAS — A three-day conference for data communications users will be held here March 6-8 for communications managers, DP managers and others interested in teleprocessing.

The Data Communications Interface '73 Conference will include sessions within such specific application areas as manufacturing, banking, retailing, wholesaling and computer services.

Details about Data Communications Interface '73 are available from the conference manager, Datacomm Interface Inc., 181 South Franklin Ave., Valley Stream, N.Y. 11581.

### Analysis-Part II

## New Networks May Aid Smaller Users

By Ronald A. Frank  
Of the CW Staff

WASHINGTON, D.C. — The would-be value-added network companies led by Packet Communications Inc. (PCI), which has already applied for Federal Communications Commission approval, have some significant advantages they feel will benefit the teleprocessing user. They point to the much more efficient utilization of wideband facilities they can get by configuring a packet-switched network.

They compare this with private-line networks which often are used only a small percentage of the time by their users. And they point to the network economies they can offer the small user who today cannot justify the cost of a private net and must rely on dial-up facilities.

While the concepts of the value-added contenders appear promising to potential

users, some observers are skeptical. They point out the Advanced Research Projects Agency (Arpa) net is losing money even with the benefit of its Department of Defense discount on lines. And many of the universities operating their CPUs on the Arpanet admit that operating delays and other problems have kept the government system from running as efficiently as originally planned.

There are presently 30 CPUs of various types operating on the Arpanet. PCI estimates it will begin to make money when it has 100 CPUs on its network. PCI thinks that goal will be reached by 1975 (assuming FCC approval).

Even if AT&T gives PCI, and others that follow, its blessings, observers feel other carriers, especially Western Union, will object to the value-added networks. And the specialized carriers who are also inter-

ested in serving the private-line user could also object.

Perhaps the most significant and optimistic comment was made by a spokesman for Tymshare, a company that is already providing time-sharing and other services to its network subscribers. "We have no problem with the PCI filing. We believe in the future of value-added network service as a new industry, and we have been operating a similar service for about a year with our Tymnet system. Any steps to strengthen this concept will solidify this new industry," according to Max Beere, director of telecommunications systems for Tymshare Inc.

It remains to be seen how the FCC will consider the PCI filing and who will object to its proposed services. But all those concerned hope a lengthy regulatory proceeding can be avoided.



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Dear Ma:

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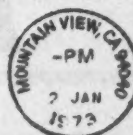
It replaces two of your units, ma. At a big saving in cost and space. For example, your 300 baud modem plus your 801 dialer rents for about \$70 per month. An equivalent Vadic modem/dialer sells for just \$700 and costs only \$23 per month on a three year lease.

Did I say equivalent, ma? I'm Sorry. It's more than equivalent, with complete diagnostics for remote and local tests, front panel display of all dialer and modem interface leads, positive dial tone, answer tone and busy signal detect, plus audible line monitoring. Yet the whole package measures just 4½" by 14" by 9" including power supply.

Which of your units will it replace? How about your 103A 300 baud modem, your 202C 1200 baud modem, your 801A pulse dialer and your 801C touchtone dialer!

P.S. Who's Vadic? They've delivered over 20,000 modems to date.

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## User Learns to Program in 30 Minutes, Then Firm Cuts Inventory by \$500,000

NEW ORLEANS — Metal Service Corp. has reduced its inventory level by more than \$500,000 with a small computer that the firm's president said he learned to program in 30 minutes.

A significant feature of the system is the computer's ability to scan the inventory status of the 4,000 items in stock daily, ordering only those needed for the immediate future and eliminating unprofitable lines, President Jack Ellis said.

"In the past, we had to check individual card records for each inventory item. It took four weeks to complete an inventory check, and we frequently were not able to reconcile some areas.

"We simply couldn't complete the inventory review fast enough manually, so we had to order as much as six months out ahead with no precise idea of our needs," he explained.

Metal Service is also using the computer to keep a running tally of profit margins for each inventory item.

"There's no price book in our area," Ellis added. "Everything we sell is almost an auction-type transaction, so each salesman must know just how

far he can negotiate and still meet our profit targets.

"Our people now have the benefit of computer-produced information, updated daily, that gives not only the current and replacement cost of each product but also advises them precisely of their

### The Small Systems User

standings against monthly sales targets, expressed in terms both of dollars and tonnages.

A study of work standards and job labor costs will be the firm's next computer project.

Ellis said his firm's use of an in-house computer is unique among single-plant steel service centers.

"When we first started in the business in 1968, I didn't think we were big enough to have our own computer — or maybe I didn't think there was a computer small enough for a company our size. We used outside DP services for a couple of years. But information simply wasn't available as we needed it so we looked into getting our own system."

"The monthly cost of the IBM System/3 is about \$400 lower than fees we formerly paid for outside services," said Fillmore J. Delaup, vice-president of finance, "and our administrative expenses have been reduced \$500 a month despite a 20% rise in sales.

#### Who Needs a Programmer?

"I see no reason for a business our size to have a full-time programmer," Delaup said. "We worked with two IBM systems engineers in developing our programs, and now there are three of us — who had never used a computer — who can write just about any program we might need."

Ellis and Delaup modified an IBM program called Optim (Order Point Technique for Inventory Management) in developing their initial programming.

"People have recently told me it takes a lot of training and experience to write computer programs," Delaup commented. "But we didn't know any better, so we just went right ahead."

"It's fun," said Ellis. "I recently wrote my son that I'm working on my golf game and playing with my computer."

### Small User Helps Youth Find Identity

CINCINNATI — A small computer is helping a company whose product is "servicing the growing identity crisis under way today, particularly among young people," noted Richard Moser, president of Velva Sheen.

Moser's product is silk-screened or sewn decals, letters, names and other images on more than five million T-shirts and other outerwear.

"The computer gives us greater flexibility in responding to orders, regardless of size, and expediting the production," Moser stated.

With 20,000 active customers ordering an average of \$100 to \$200 per day, the company said it processes from 400 to 500 invoices a day.

#### All Needs Served

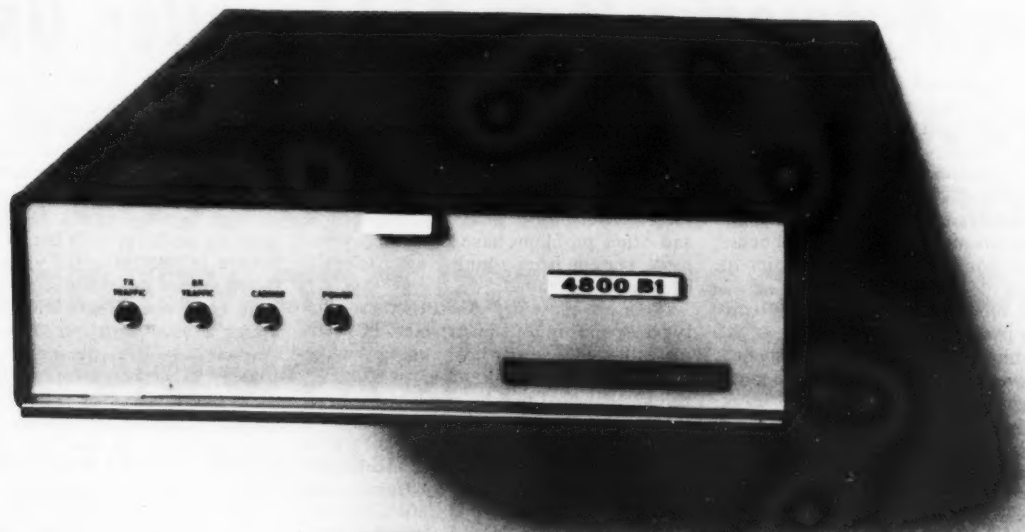
Such volume also necessitates maintaining sufficient inventory to serve the short-term and long-range production needs of the company, he added.

When an order is received, the information is keypunched onto a card about the size of a credit card. The card is then fed into the S/3 which is programmed to produce picking orders and invoices. It updates inventory on the basis of materials needed to fill the order, Moser explained.

The system also handles a variety of financial support functions, including analysis of sales by each salesman and according to items sold by geographic area.

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Penril's 4800B-1 modem pictured above has been selected by the U.S. Internal Revenue Service for use in its nationwide data communications network.



## Bits & Pieces

### CDC Unveils Add-On Memory for 370 Users

MINNEAPOLIS — Control Data Corp. has introduced a group of interchangeable monolithic memory units for IBM System 370 computers.

The 33100 Series Main Memory Systems are available for IBM 370 models 135 through 168 and range in storage capacity from 49K to over 4M bytes of on-line memory, the firm's spokesman said.

Present users of 370 processors can use the 331000 Series, priced an average of 15% below the cost of IBM mainframe memory, to increase capacities up to and beyond the IBM limits, the spokesman said.

Monthly lease price for CDC add-on units ranges from \$695/mo (for a 370/135 with 48K bytes of memory) to \$4,330/mo (models 155 and 165 with 512K bytes) on a two-year lease.

Purchase prices for these units are \$33,100 and \$198,000, respectively.

Availability by mainframe model is: 370/155, February 1973; 165, March; 145, June; 135, August; 158, December; and 168, February 1974.

### Time Card Punched Automatically

MOUNTAIN LAKES, N.J. — A unit to automate the keypunching of time card data is available from Datron Equipment.

In a typical example, employees entering a company would insert a standard 80-column tab card into the Model 401 Automatic Keypunching Time Recorder to generate a three- to seven-digit time and data record — in hours and 1/100ths of hours — immediately ready for computer processing, the firm's spokesman said.

The Model 401 can be rented on a 90-day trial basis and/or purchased for \$1,859 from 100 Rt. 46, 07046.

### For a Cleaner, Brighter Disk

PALOS VERDES PENINSULA, Calif. — The Randomex Model 335 automatic disk pack cleaner cleans 1316, 2316 and 3336 type packs in a five-minute cycle, according to the firm's spokesman.

It removes more than 97% of the contaminants from disk surfaces and will not damage data stored on the pack, he maintained.

The unit costs \$3,750 with leasing arrangements possible from 27303 Warrior Drive 90274.

### Centronics Printer, U-100 Connect

HUDSON, N.H. — The Centronics Uniscope 100 interface allows Univac U-100 CRT Terminal users to connect any Centronics printer directly to the terminal.

Up to eight printers can be daisy-chained with printer locations up to 200 feet from a U-100 terminal or any device on a U-100 auxiliary interface, he said.

The \$415 Centronics interface is available from One Wall St., 03051.

## IBM Increases Memory, Disk Support

### • Doubles Memory On Larger 370s

WHITE PLAINS, N.Y. — IBM has unveiled main memories for its 370/145, 370/158 and 370/168 models which allow users to double previous maximums in each case.

Main memory for the 370/158 has been increased to over 4M characters — or 8M characters for the multiprocessing version of the Model 158 [CW, Feb. 7].

The 370/168 has been increased to more than 8M characters — or 16M characters for the multiprocessing version.

New versions for main memory of the 370/145 bring main memory capacity to over 1M character.

Monthly rental for the new Model 158 central processing units will be \$47,300 with 3,077K characters and \$52,500 with 4,096K characters. Purchase prices will be \$2,238,700 and \$2,468,500.

Monthly rental for the new Model 168 central processing units will range from \$81,625 with 5,120K characters to \$97,225 with 8,192K characters. Purchase prices will range from \$3,869,500 to \$4,558,900.

First customer shipments for both new models are scheduled to begin in March 1974.

Monthly rental for the new Model 145 central processing units will range from \$14,055 with 256K characters to \$21,955 with 1,024K characters. Purchase prices will range from \$674,640 to \$1,053,800. First customer shipments are scheduled for June.

### Interface Modules Offered PDP-11 Users

MAYNARD, Mass. — Digital Equipment Corp. has introduced two I/O interfaces for PDP-11 users which permit interfacing digital voltmeters, multimeters and other similar remotely programmable instruments.

The M1623 works from the processor out, generating signals to control the operation of these devices, a spokesman said.

The M1621 works in the other direction, transferring data and status information from a voltmeter, multimeter or similar device into a PDP-11 minicomputer under interrupt or program I/O control.

This interface allows the computer to monitor the equipment readings at periodic intervals or upon demand. The device contains all the bus drivers, and multiplex and interrupt logic necessary to accept 34 bits of TTL-level information and transfer this information to the computer's Unibus.

Cost of the M1623 is \$150, and \$125 for the M1621 with delivery off-the-shelf.

### • Doubles Disk Drives For 135 and Up

WHITE PLAINS, N.Y. — IBM has announced new features for the 3330 disk system which allows 370 users — Model 135 and up — to double the number of drives they can support on any single attachment.

To have this doubling capability, the user's IBM CPU must be able to support OS, OS/VS1 or OS/VS2.

The features include:

- A string switch allowing a 3333 disk storage and control and its associated 3330 disk storage drives to be switched dynamically under program control between two attachments.

- The 32-drive expansion feature permitting four 3333s and their associated 3330 disk storage units — up to 32 drives — to be controlled by a single direct-access attachment.

- Remote switch attachment for attaching of the 3333 string switch to the configuration control panel of the new 158MP (multiprocessor) or 168MP.

The 32-drive expansion feature operates

under OS, OS/VS1 and OS/VS2. The 3333 string switch feature is supported by the same operating systems supporting the 3830 storage control. The remote switch attachment requires no programming support.

Prices for the 3333 string switch are \$170/mo under the extended-term plan and \$200 and \$8,000 for monthly rental and purchase respectively.

There is no charge for the 32-drive expansion feature, but it requires a control store extension in the 3330 disk controller, available at a monthly rental ranging from \$300 to \$500 and costing between \$14,400 and \$28,800.

There is no charge for the remote switch attachment.

All features are field-installable with initial deliveries and field installation of the 3333 string-switch feature and 32-drive expansion feature scheduled for August 1973 for attaching to models 145, 158 and 168.

Deliveries for attaching to the 135 are set for October 1973 with general field installation to begin in November.

Remote switching will be available with initial delivery of all new 158MP and 168MP systems.

## HIS Enhances 6030s and 6040s

By Michael Weinstein

Of the CW Staff

WELLESLEY HILLS, Mass. — Honeywell Information Systems has announced memory expansion and "fail-soft" protection enhancements for models 6030/6040 computers.

Both enhancements were previously available only on the top-of-the-line models in the HIS Series 6000.

The 6030 and 6040 are designed for use in multidimensional business/scientific batch transactions, time-sharing processing and multiprogramming applications with the 6040 including an extended instruction set for faster processing speed of Cobol-written programs, the firm's spokesman said.

### Doubling System Memory

Memory capability can be expanded to a maximum of 1M byte (262K words) on both models, which is twice the previous capacity, the spokesman said.

This memory upgrade is available on all new installations and is optional on presently installed models, he said.

Memory which operates at 1.2  $\mu$ sec cycle time with a 36-bit word structure can be increased in two increments of 262K bytes (65K words) from the previous maximum of 524K bytes (131K words), to reach the new maximum of 1M byte, he said.

Monthly rental on a five-year lease ranges from \$10,054 to \$21,850 for the Model 6030 and from \$11,288 to \$23,000 for the Model 6040.

Honeywell uses the term "fail-soft" to

define a system with at least two of every system module. The failure of any one module — or one of every type of module — still leaves the user with an operating computer system, the spokesman asserted.

The entire configuration is controlled by a single operating system — General Comprehensive Operating System (GCOS), the spokesman added.

GCOS allows the system to continue to operate by moving processing functions away from the faulty module and through the backup.

This concept also allows on-line testing of modules: one module can be removed for diagnostics while the system continues to operate using the other identical module, the spokesman said.

A complete system includes two of the standard models 6030 or 6040. Each has a processor, a system controller, an IOM, memory ranging from 262K bytes to 524K bytes and associated parts and connecting cables. Maximum system memory is 1M byte, the spokesman said.

Unlike a "dual" arrangement that has two distinct systems, this is actually one large system with multiple components — all of which are used at all times.

A given program might have either processor working on it from one instant to the next, he explained.

Monthly rental on a three-year lease for the minimum fail-soft systems starts at \$31,400 for the Model 6030 and \$34,000 for the Model 6040.

First deliveries are expected by the end of 1973 for fail-soft systems.



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# Computer Users' Forum Registration

Name \_\_\_\_\_  
 Title \_\_\_\_\_  
 Company \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_  
 State \_\_\_\_\_ Zip \_\_\_\_\_

## 1. Please circle one number in each category.

(This information is necessary to provide a better forum for you.)

### YOUR INDUSTRY

01 Mining/Construction/Oil & Refin.  
 02 Manufacturing - Computer or data  
 system hardware, peripherals/  
 other associated mechanical devices  
 03 Manufacturing (other)  
 04 Utilities/Comm. Sys./Transport.  
 05 Wholesale/Retail

06 Finance/Insurance/Real Estate  
 07 DP Serv. Bureaus/Software/Plann.  
 08 Business Services (except DP)  
 09 Education/Medical/Legal  
 10 Federal, State and Local Govt.  
 12 Communications/Printing/Publ.  
 13 Other: \_\_\_\_\_

### YOUR FUNCTION

01 Corporate Officer  
 02 Data Processing & Other Operational  
 Management  
 03 Data Processing Professional Staff  
 04 Consultant

05 Lawyer/Accountant  
 06 Engineering - Mgmt./Scientific/R&D  
 07 Sales/Marketing/Account Exec.  
 08 Librarian/Educator  
 09 Other: \_\_\_\_\_

## 2. Please check the appropriate city:

— Boston	Feb. 13-15 (Tues, Wed, Thur)	Sheraton-Boston Hotel
— Washington, D.C.	Feb. 20-22 (Tues, Wed, Thur)	Sheraton-Park Hotel
— New York	March 5-7 (Mon, Tues, Wed)	New York Hilton
— Atlanta	March 13-15 (Tues, Wed, Thur)	Regency-Hyatt House
— Houston	March 20-22 (Tues, Wed, Thur)	Hyatt-Regency Houston
— Anaheim	March 27-29 (Tues, Wed, Thur)	Disneyland Hotel
— San Francisco	April 3-5 (Tues, Wed, Thur)	Civic Auditorium (Forums & Exposition) Del Webb Towne House (Hotel Rooms)
— Kansas City, Mo.	April 11-13 (Wed, Thur, Fri)	Municipal Auditorium (Forums & Exposition) Muehlebach (Hotel Rooms)
— Chicago	April 17-19 (Tues, Wed, Thur)	Conrad Hilton Hotel
— Cleveland	April 24-26 (Tues, Wed, Thur)	Convention Center (Forums & Exposition) Sheraton Cleveland (Hotel Rooms)

## 3. Check the day(s) you will attend the Forums.

☐ Day 1 - Data Entry - 9 am-2:30 pm  
☐ Day 2 - Data Communications - 9 am-2:30 pm  
☐ Day 3 - Installation Management - 9 am-2:30 pm  
 NOTE: Afternoon Sessions are open to all - free of charge.

## 4. Your enclosed check will cover all workshop materials, luncheon, Forum admission and admission to the Exposition Hall (make checks payable to "The Computer Caravan")

☐ One Day - \$25.00      ☐ Two Days - \$50.00  
☐ Three Days - \$75.00

All Tickets will be held in your name at the door

Exposition only tickets (no forums or luncheon) are \$5.00 and should be purchased at the door (ticket good for all three days).

Return this form to:

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For additional registrations, copy this form - or write for extra copies.

# SPACE SAVER

## FOR THE 1973 COMPUTER USERS' FORUM & EXPOSITION - The National Computer Conference that's coming to you.



If you're interested in more efficient EDP operations, then you should be reserving your space right now for The Computer Caravan/73 Users' Forums. This unique program will soon be in a city near you - with shirtsleeve workshops, panel discussions, user-oriented experts, and an exchange of information that will benefit you and your company.

Each day of the three-day show will feature a different topic. You'll be able to air your problems, and learn how others have solved theirs. You'll ask questions, give opinions - and get answers. And you'll come out of the Forum with some new ideas on making your EDP operation more efficient.

### FORUM TOPICS

#### Day 1 - Data Entry

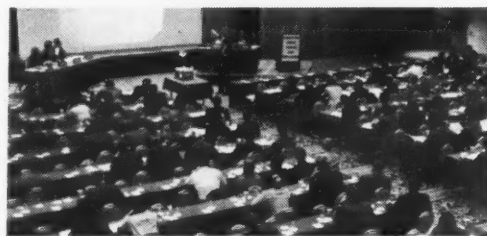
Including panel discussions and workshops on:  
 Key punch Replacement  
 (shared processor)  
 Intelligent Terminals  
 OCR  
 Direct (on-line) Data Entry

#### Day 2 - Communications

Four panelists will discuss two top issues:  
 Data Transmission  
 a) dial-up  
 b) leased lines/broadband  
 Equipment Selection  
 a) communications processors  
 b) control equipment (terminals, modems)

#### Day 3 - Installation Management

Panel discussion on management aspects and workshops on specific techniques in the following areas:  
 Personnel, recruiting and training  
 Programming management  
 Independent Peripherals  
 a) memories  
 b) other peripherals



### Forum Attendance is limited

In order for the Forums to work, attendance is strictly limited. So don't wait too long to save your space.

### OPEN SESSIONS

New for this year, we'll be conducting open sessions each afternoon for anyone who wants to attend. Each day at 2:30 a different subject will be opened up for discussion and controversy. Here's the schedule.

Day 1 - Data Communications Planning  
 Day 2 - Software Evaluation Panel  
 Day 3 - Small Systems Panel

### EXPOSITION

The expanded Exhibit Floor will be open from 10 to 6 each day. A variety of leading companies will be there with their latest EDP products and services. And you'll have plenty of time to look at everything that interests you. It's an excellent opportunity to stay ahead of this fast-moving industry. And if you have to make decisions, you should be there. (Advance registration is not required for the Exposition.)

The  
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## 'City, County Urged to Share'

By a CW Staff Writer

FORT COLLINS, Colo. — City and county governments should forget their political and personal differences and share a common computer facility, according to the local county commissioner.

With the mountains of data to be processed by any government agency, William Manuel feels "computerization is a must, even for routine work. But because of the insular attitudes among agencies, each usually goes its own way for data processing."

### 'Separate but Identical'

In attacking the costly "separate but identical work practices," Manuel noted, "tax records, real estate transactions, law enforcement reporting, departmental inventories and payrolls are just a few areas of processing common to most city and county governments."

"For example, once a program is running on the city computer, all the county has to do is add its own particular figures to substantially cut the cost of programming an outside machine for the same batch processing."

To put this philosophy into action, Larimer County acquired a PDP-10 to meet the internal needs of the county and worked successfully to convince city and nearby counties that they could profitably use the shared processor, Manuel stated.

"We can point to terrific time and money savings in about every category of the computer's use," he said.

"On our welfare enrollment of about 3,500, the computer keeps up-to-date records on all those eligible, breaking down personal and social factors for the benefit of caseworkers, and issues monthly financial reports and writes all checks, figuring deductions for food stamps.

### Everyone's Happy!

"Before we used the computer, welfare recipients would receive their checks, then come in and wait in long lines to buy their food stamps. Now that the computer can calculate food stamp deductions before writing the checks, these people get their food stamps without having to come in here. They are happy; we are happy. And the computer does all this in about 10 minutes — it would take two people several days to accomplish the same chore with far less accuracy."

Similar improvements are cited in the handling of motor vehicle titles, property transactions and inventory and payroll.

"In the past, when property changed hands, the transaction was entered by hand into county records. We were getting about 150 transactions per day, so when a person wanted to check the record for a property transaction, he had to know the day that record was entered, because we could not alphabetize the records by hand.

"If he didn't know the date of the

transaction, it could take weeks of poring over the books to find what he was looking for. Some people, the unlucky ones, simply never found the transaction they wanted," he stressed.

"Now thanks to the computer, the county clerk's office can alphabetically update transactions every six months under three cross-references: reception date; grantor name; and grantee name.

The computer can now print out the time, record page number, fees, buyer and seller of any property transaction requested.

On a typical working day the Decsystem-10 is processing clerk and recorder business, utility billing updates, welfare rolls and county assessor records for Larimer County. On a typical school day starting this fall, the computer will additionally be used for math instruction by remote terminals at local high schools.

Convinced that the Larimer computer can save money for other city and county governments in the same fashion, Manuel will go to the administrative bodies with impressive results in his efforts to centralized computing resources.

"Our purpose in the long term," he says, "is to keep our operating costs 25% less than those of outside bureaus."

## Why you should go to the Computer Caravan.

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New high-speed reader — first 1,000 cps reader at less than \$1,000.

The new iomates. See all 13 in Boston, Feb. 13-15.

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PRODUCT CODE	DESCRIPTION	QUANTITY	PRICE	AMOUNT
301	DIODE, 1N1201A	12	1.82	21.84
340	DIODE, 1N645	6	1.45	8.70
303	DIODE, 1N5404	18	.61	10.98
3420	TRANSISTOR, 2N4036	25	1.32	33.00
3421	TRANSISTOR, 2N3054	30	1.25	37.50
302	DIODE, 1N3826A	15	1.69	25.35
3457	TRANSISTOR, 2N3133	33	.66	21.78
3459	TRANSISTOR, 2N5687	9	2.50	22.50

NET AMOUNT 181.65 TAX % 5 TAX AMOUNT 9.08 SHIPPING CHARGES 1.27 TOTAL AMOUNT 192.00

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ACCUMULATE total of all items above

MULTIPLY net amount by tax %

RANGE CHECK within one year from current date

CHECK DIGIT VERIFICATION

EQUAL COMPARE against table of valid numbers

AUTOMATIC DUPLICATION on each order

CAPACITY CONTROL field must be completely filled

TABLE LOOKUP 1 = prepaid 2 = express 3 = freight

RANGE CHECK according to product code

MULTIPLY quantity by price

COMPARE to minimum order quantity according to product code

ADD to total amount

## PDP-15 Add-On Allows Multiple Requests

LEXINGTON, Mass. — Dimensional Systems, Inc. has introduced a Multi-Port option to its DMS-15 Add-on Core Memory for the DEC PDP-15 computer.

Allowing up to four "users," the Multi-Port option accepts memory address requests from the various "controllers" and maps these addresses to a pre-determined block of memory. If two requests are received simultaneously, access is granted to the port with the highest assigned priority.

The system operates on an interlocked request/grant basis and has the ability to address up to 128K of core without additional hardware. It is completely compatible with the CPU and all peripherals.

By allowing more than one memory address to be simultaneously active, the Multi-Port option, coupled with the DMS-15 core memory provides a modular method of increasing the total memory bandwidth of the computing system. Cost is \$4,000 from 31 Hartwell Ave.

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## The Sycor 340 Intelligent Communications Terminal.

# Three MDS Print Stations Enable Off-Line Operations

UTICA, N.Y. — Mohawk Data Sciences (MDS) has added three models to the low end of its line of off-line print stations.

A print station — as defined by MDS — is composed of a printer tied to a read-only tape drive so users can create tapes on-line, load them at the print stations and perform all printing off-line.

The units differ from previously offered off-line print stations in that the printer is slower — 900 line/min compared to 1,250 line/min — and the price has been reduced about 30% for the newer units.

## Two Units Lock User In

The 7160-2 and 9160-2 print stations are connected to read-only 7- and 9-channel MDS magnetic tape units respectively.

The 7-channel drive handles tapes recorded at 200- or 556 bit/in. while the 9-channel unit is designed for 800 bit/in. tape.

When a user orders either of these units, MDS will modify the units to read tape produced by his processor — e.g., IBM,

HIS, etc., the spokesman said.

Once set for a specified computer system, the user cannot have his print stations changed to handle tape produced by another vendor's equipment, the spokesman stated.

Both drum printers feature 160 horizontal print position capability and 64-char. IBM A/H print drum — IBM 1403 standard.

## One Unit for All Mainframes

The MDS 7160-2 is equipped with an IBM A code converter, and the 9160 with an IBM S/360 code converter, the spokesman added.

In addition, optional features are available for code and verticle format command compatibility to allow the user to use these units in facilities built around mainframes from manufacturers other than IBM, he asserted.

The 2501-2 is a programmable print station which is essentially the same as the 7160-2 and 9160-2 except that 4K bytes of memory are included.

The unit can thus be programmed to

handle a wide variety of tape formats to serve the multivendor computer user, the spokesman said.

The 2501-2 reads magnetic tape in densities from 200- through 1,600 bit/in.

The 7160-2 and 9160-2 cost \$30,000 and \$32,000 respectively with monthly rental and maintenance at \$880.

The 2501-2 ranges in price from \$43,000 to \$47,000 depending on which of the four magnetic tape units is employed.

Rental and maintenance prices range from \$1,200 to \$1,360/mo. All inquiries are directed to corporate headquarters, Box 362, 13503.

## Mag Tape Stripper Takes It Off

WOODLAND HILLS, Calif. — A magnetic tape stripper that removes and destroys up to the first 1,200 feet of a tape on a reel is offered by Data Products Inc.

Cutting away the front portion of a tape increases reliability by disposing of the most used portion of the reel, the firm's spokesman said.

Due to the nature of programming, the first 1,000 feet of tape are normally used on a continuous basis in the read/write operation. However, basic economies dictate that tape be purchased in 2,400-foot reels, he explained.

To optimize the use of the entire tape, the Tape Stripper is used on a periodic basis to remove 100 feet or more, he continued.

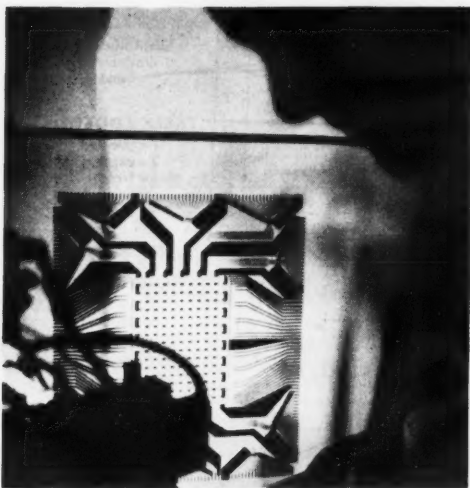
Previously this operation was done by hand and took 10 times as long, the spokesman added.

Price of the unit is \$890 from 6219 De Soto Ave., 91364.



Miss E.D. Pea (alias Joie Bishop) (left) and Miss Maggie Tape (alias Fran Sinatra) welcome a new stripper (alias Magnetic Tape Stripper) at the Pink Pussy Cat in Los Angeles.

## A lot of companies have inventors. But only one communications company has Bell Labs.



in the first place. Bell Labs is where computers learned to talk over the telephone.

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That company includes, of course, your local Bell Company.

Let's say we run into a baffling problem while repairing your computer's telecommunications system.

The first thing we do is call in the experts.

They might be people from Western Electric. The people who built your equipment.

Or even the people from Bell Labs who developed your equipment

## I/O Interface Board Offered Nova Users

ORANGE, Calif. — A general-purpose I/O interface board for Data General minicomputer users, available from MDB Systems, contains all necessary circuitry to connect the user's logic to the I/O bus of any Nova series mini, the firm's spokesman said.

The I/O logic board provides for mounting up to 105, 14- and/or 16-pin wire-wrap sockets — 60% more than the comparable Data General board — with allowances for mounting 24- to 40-pin sockets, the spokesman stated.

In addition to the basic circuitry to interface to the I/O bus, the user has the option of up to four 16-bit registers with byte packing and unpacking. Other options are a data channel interface and counter logic for zero word count detection, he added.

Price of the basic board is \$250 without pins and sockets. Delivery is from stock from 981 N. Main St., 92667.

## Unit Recreates Paper Tape Over Phone Lines

SAN GABRIEL, Calif. — Two stand-alone paper tape transmitters from Addmaster Corp. allow users to transmit and recreate paper tape over telephone lines.

The Models 606 (parallel) and 608 (serial, RS232) incorporate their own power supplies with controls for forward/reverse and user-specified 10-, 15-, 30-, 60- or 120 char./sec asynchronous operations, the firm's spokesman stated.

Both units operate with 5-, 6-, 7- or 8-level tape in standard widths in fanfold or reel.

An RS232 interface allows the user to plug directly into a modem or in some cases the I/O port of a computer. The parallel interface is compatible with most minicomputers, the spokesman asserted.

Single unit cost for the Model 606 is \$496 with the Model 608 selling for \$605. Volume discounts are available. The firm is at 416 Junipero Serra Drive, 91776.



**'Approaches, Techniques'****Compcon: Networks and Networks and...**

SAN FRANCISCO — Compcon 73, the Seventh Annual IEEE Computer Society International Conference Feb. 27-March 1, will be dedicated entirely to examining networks.

"We wish to present a total picture of networks now in existence or under construction. The aims, experiences and problems encountered should be part of this picture," said Chairman Sidney Fern-

**Societies/  
User Groups**

bach, head of the computation department at Livermore Laboratory.

"Failures or near successes should be recorded, as well as successes. We want to be up-to-date, but avoid paper studies. The major topics of interest are approaches and techniques tried enough to be evaluated," he observed.

**Back to Class**

A special one-day tutorial on Monday is designed for those who feel their knowledge of networks needs some updating on the essentials, he noted.

The presentation will cover introduction to networks, data communications, teleprocessing computers, software issues, telecommunication network analysis and design and future directions. Enrollment in the tutorial is separate.

Concurrent sessions and panels are scheduled for Wednesday and Thursday.

The keynote address Tuesday will be given by Dr. Ruth Davis, director of the Institute for Computer Sciences and Technology at the National Bureau of Standards.

Single sessions of "broad topical interest" are scheduled Tuesday, on network viability, network examples and network components and design considerations.

On Wednesday, attendees may select both a session and a panel discussion on network security. Other sessions focus on university-developed networks and legal aspects of networks.

A session on performance in computer communication systems will examine the relationship and trade-offs of parameters such as message traffic, channel char-

**San Francisco Meeting  
To Delve Into Simulation**

SAN FRANCISCO — The newly established Simulation Technical Committee of the IEEE Computer Society has been formed to address the use of simulation in the development, installation and tuning of computer systems and the use of computers for simulation in other application areas.

Interested professionals may attend the first meeting Feb. 28 at the Jack Tar Hotel here.

Chairman of the group is William T. McClelland, IBM, P.O. Box 100, Kingston, N.Y. 12401.

**Gordon Smith Leaves ACM**

NEW YORK — The Association for Computing Machinery's executive director, Gordon Smith, has resigned from his post. Irene Hollister is serving as acting executive director.

"During Gordon's term as executive director, ACM has continued to grow in both the quality and quantity of its activities," ACM President Anthony Ralston observed.

"Among the important new activities begun during his term was the Ombudsman Program in which he has taken a close interest," he added.

**Acpa Adds Five to Board**

SADDLE BROOK, N.J. — The Association of Computer Programmers and Analysts (Acpa) has elected five new members to its board of directors and named the executive committee.

The executive committee consists of Geoffrey B. Thomas, national chairman; Richard Thomas, vice-chairman; Dianne Halloran, secretary, and James Manley, treasurer.

acteristics, multiplexing techniques, architecture and communication software.

A panel discussion titled "How Not to Run a Network" will be chaired by Max Beree, Tymshare Corp.

A session on examples in the business community on Thursday morning will give attendees a chance to learn about "Computer Networks for Retail Stores" from Vernon Schatz, Jewel Companies, and "Microprocessor Utilization in Transaction Terminals Nets" from Allen Cuccio, Honeywell Information Systems, Inc.

With advance registration before Feb. 15, the conference fee for IEEE and ACM members is \$40, nonmembers \$50. Otherwise the fee is \$10 more for each category. Student fees are \$15. Registration chairman is Ben E. Britt, IBM General Products Division, Department H75/Bldg. 141, Monterey & Cottle Roads, San Jose, Calif. 95114.

The price of the one-day tutorial is \$60, which includes luncheon and text materials. More information is available from Joseph P. Fernandez, Manager, Central Scientific Services, IBM Research Division, Department K-01/Bldg. 028, Monterey & Cottle Roads, San Jose, Calif. 95114.

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Portaverter



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**The new iomates. See all 13 in  
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## Modeling, Decision Analysis, Case Study

# ASM Management Seminars to Reach Four Cities

CLEVELAND — A one-day seminar on advanced project management, sponsored in four different cities by the Association for Systems Management (ASM), is directed at managers and other senior staff members working on large-scale projects, and has "limited application to smaller-scale EDP or programming projects," according to ASM sources.

### Education

Part of the association's Professional Education Program, the seminar is organized into four sessions, each of which includes a lecture, group discussion, question/answer period and case study material. Taken as a whole, the emphasis is on achieving intended results, on

time and within budget, ASM added.

#### Management in Focus

The program opens with a session on Decision Analysis for Project Management, which attempts to put management in perspective and to spell out the role of the analyst and the decision-maker. The program then considers when to apply decision analysis, the parameters that should be used and the intricacies of decision trees.

Session two delves into project modeling techniques, starting with a review of basic probability and statistics, then considering the strengths and weaknesses of system models. Some time will be spent on Monte Carlo techniques, but the handling of subjective estimates and the analysis of output from various models will also be con-

sidered.

The use of forecasting techniques and suggestions on how to gauge probability of success are covered in the session on modeling for time, cost and performance. From there, the parti-

### Direct Access Filing Covered By Net Courses

NEW YORK — The library of multimedia training courses available to "subscribers" of the Data Processing Education Network (DPEN) has recently been extended in two different directions. New courses include a broad-brush User's Guide to DP Project Management, and a review of the details of Direct Access File Structure and Design.

DPEN is geared to providing specific subject material in courses based on student interaction with a "responsive TV" unit at the user site. Each course is presented on a mix of color video cassettes, audio tapes, student workbooks, pre- and post-course tests and an administrator's guide.

#### Project Development

The DP Project Management course describes the development of a project and defines the responsibilities of the end user and the DP department in each phase. It is written specifically for the user manager who wants to gain a better understanding of projects using DP. No prior knowledge of DP is required, according to DPEN.

The second course, on the other hand, is an in-depth discussion of the basic direct access devices, file organizations and equipment selection. It also considers the external problems associated with the choice of a file organization and with creation of a file, regardless of which equipment is chosen.

The course is meant for the programmer-analyst with a knowledge of sequential file structure, and now needs information about direct access systems.

DPEN is at 437 Madison Ave., 10022.

cipants go into project network analysis and network logic, particularly as it relates to input and output.

#### Typical Project

The case study is introduced in the third session and the students and instructors spend the remainder of the day analyzing the time, cost and performance factors of what ASM considers a typical project. Finally, through simulation, the participants gain "hands-on" experience in applying the tools and techniques they studied earlier.

The seminars will travel from Greenville, S.C., to Boston, to Des Moines, Iowa, and then to Mansfield, Ohio. In all four cities, the discussions will be led

by John M. Cockerham, chairman of his own consulting firm, and Truman W. Howard III, chief, systems and cost analysis department, of the Army's School of Logistics Science, Ft. Lee, Va.

The classes will be held in Greenville, Feb. 19, at the Colonial Quality Court Motel, and in Boston, Feb. 20, at the Sheraton Boston Hotel. The Des Moines stop, Feb. 22, will be at the Holiday Inn as will the Mansfield seminar, on Feb. 23.

The seminars are cosponsored by the ASM chapter in each area, but are open to both ASM members, for \$50, and to non-members, for \$65.

ASM's Education Department is at 24587 Bagley Road, 44138.

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While you're still thinking about it, why not pick up your phone and call—collect—Robert Kenoyer, Vice President, at (305) 524-1559. Of course you aren't obligated in any way. Western Union Computer Utilities, Inc., 609 South Andrews Ave., Fort Lauderdale, Florida 33301.

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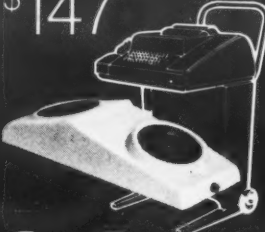
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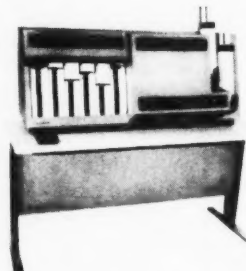
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## California to Monitor Illegal Drug Flow With Data From Wholesalers, Druggists

Special to Computerworld

SACRAMENTO, Calif. — The state has begun implementing a computerized system to help halt the flow of illegal barbiturates to street and underground markets.

Operated on a Univac Series 70/45 used by the state Board of Equalization, the system will monitor the flow of drugs into the state and provide alerts if it appears the drugs are being illegally diverted.

A state spokesman said the system, delayed by

red tape for almost two years, will receive data from manufacturers and wholesalers as the drugs move to retail and then from some 5,000 pharmacies in the state.

Initial specifications for the data base estimated as many as 19,000 different drugs could be reported, but plans call for reports at first on 3,000 to 4,000 dangerous drugs from 108 manufacturers.

The system may cost as much as \$1.5 million a year to operate. The Federal Government provided a grant of \$119,588 for development and implementation.

As structured, information from the manufacturers and wholesalers will be checked with lists from pharmacies and from drug purchasers to determine what has been received.

If discrepancies turn up, narcotics agents will investigate.

The computer is also programmed to react whenever a regular drug purchaser places a much larger order than usual.

## Australian Group to Focus On Problems in Outback

By William A. Scholes

Special to Computerworld

MELBOURNE, Australia — The Building Research Division of the Australian Commonwealth Scientific and Industrial Research Organization (AcSiro) has established a Remote Communities Environment Unit to study the problems of remote communities in mining projects in the Outback.

The unit's studies are intended to assist decision-makers such as company managers, government officials, town and regional planners and architects.

"Human settlements operate as highly complex systems comprising a whole range of smaller entities such as social, economic, technological and communications subsystems," an AcSiro official said. "These in turn are made up of a network of interacting components, usually connected within the same subsystem, but often with components in other subsystems."

New techniques have evolved recently, he noted, which enable the performance of complex systems to be understood and permit fairly accurate predictions of the consequences of changing any of the components.

It is possible, he noted, using computer techniques to evaluate rapidly the ultimate worth of many possible changes to different parts of a system. The changes taken together are called the "systems approach" which forms the basis of the work of the Remote Communities Environment Unit.

As one researcher in the unit said: "Our goal is to demonstrate how conditions can be created in remote communities in tropical Australia such that people will be attracted to these towns and residents will enjoy a quality of life as good as or better than that which will be their expectation in developed centers anywhere in Australia."

## Vocational Planners To Show Missourians How

JEFFERSON CITY, Mo. — A statewide computer-based system has begun here to help vocational planners train Missourians to meet the needs of the present labor market.

The program, called Missouri Occupational Training Information System (Motis), will provide information about individuals enrolled in vocational and technical programs as well as data on the kinds of jobs presently available.

## Lawmakers Get Printing Aid

ANNAPOLIS, Md. — Maryland legislators expect to save \$50,000/yr with a computer to help print their legislation.

In the past, all bills were printed by an outside firm, said Carl N. Everstein, director of the Department of Legislative Reference. This year all bills will be entered into a computer through a teletypewriter. The copies produced by the TTY are camera-ready; they can be photographed and run off on offset printing machines purchased by the department.

In addition, all the bills will be available through the computer for amendment or retrieval.

Why you should go to the Computer Caravan.

**iomec inc**  
Iodisc Drive  
Model 3404



New Iodisc Series 3000 top-loading disc drive — 200 tracks/inch using IBM-type 5440 cartridge. 60 msec average access time and 96 million bit capacity. Light weight and small enough to easily fit 24-inch deep standard rack.

The new iomates. See all 13 in Boston, Feb. 13-15.

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Custom calls for us to fill this space with words of praise for our various time division multiplexers and Port Selectors.

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Because even though we save our clients thousands every month on their data communications costs, we don't know how much we can save you. And we won't know until we know your situation.

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Gentlemen:

Frankly, I don't know whether you can help, either, but I'm always interested in investigating new ways of saving money. Here's the information you need to get started on my problem.

We ☐ have a system with a \_\_\_\_\_ (name and model number)  
☐ are planning central computer at \_\_\_\_\_ (location)

and the following terminals feeding into it:

Number	Manufacturer	Model	Type	Data rate	Modems used

These terminals are located at \_\_\_\_\_

As data lines, we use ☐ dedicated ☐ voice grade lines.  
☐ dial-up ☐ conditioned

We ☐ do ☐ do not use any multiplexers at this time.

Anticipated system growth is as follows \_\_\_\_\_

My telling you all this doesn't obligate me in any way; I just want to make sure I'm not missing out on any savings.

Name \_\_\_\_\_ Title \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
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## Oil Transactions Secured

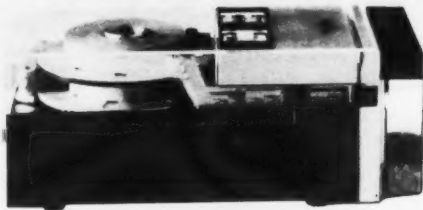
TAMPA, Fla. — A wallet-sized plastic card that passes information through a mini-based computer system helps provide billing information, loading control and security at Marathon Oil Co.'s wholesale products distribution terminals here.

When a tank truck enters the terminal, the driver takes it to the loading position that dispenses the petroleum products he wants.

The driver inserts two plastic cards that identify him, the hauler he works for, the company, the customer and the products the customer is authorized to draw. The driver dials in a five-digit bill of lading code.

When all the information has been validated, the computer activates fuel dispersal circuits and the driver can begin withdrawing products. If the driver is not authorized to get the product selected, the computer will not activate the circuits.

As the truck is being loaded, the mini, a Data General Nova/1200, monitors the fuel flow and logs the net and gross gallons in the transaction file. The data from the transaction is compiled by the computer, typed out on a teletypewriter and recorded on punched paper tape.



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## Courthouse Renovation Picks Up Speed

BELVIDERE, N.J. — Computerized planning in architecture is playing a leading role in speeding up the renovation of the Warren County Courthouse complex here.

Architect Stanley John Lacz of Architecture/Engineering/Planning estimated computer techniques saved 57 man-days of work on the project. Decision Resource Service of Zeeland,

Mich., provided two sets of questionnaires of 14 questions each, which were given to 180 Warren County employees, and processed their results on a computer. The computer did the job in three days, as opposed to 60 without a computer.

The first set of questionnaires was designed to establish the relationships between departments, as well as personnel rela-

tionships within a department, to determine the most efficient and practical physical placements of entities within the courthouse complex. For example, offices relating to the courts were assigned space close to courtrooms and judges' chambers.

The second set of questionnaires determined space requirements of personnel in square feet, by noting sit-down and mobile jobs.

In addition to saving time and money, Lacz commented, "you couldn't match the sophistication and exactitude of the answers" generated by the computer.

## Firm Has Greetings for Customers

Special to Computerworld

SYDNEY, Australia — Valentine Holdings Ltd., manufacturer of greeting cards, is using computers to develop a system to handle the distribution of its products.

The greeting cards are distributed to more than 5,000 retailers in Australia, involving chain stores, retail stores and news agents.

Five years ago the company started to convert from a manual system of stock control to a computerized system, and now

the company has what it considers the ultimate system in stock control in retail outlets.

In the drawers below each of the 600,000 retail pockets is a computer punched card. When the retailer puts his last cards in the pockets, he sends the cards into Valentine's. Its computer is thus kept informed on all the 600,000 positions as the cards come in at the rate of 12,000 a day.

The company has more than 1,000 different designs of cards current all the time and more than 200 programs in the sweep of programs used in stock control. "The computer can tell how long it has been taking to sell a line and can change slow-selling lines," noted Ted Vogt, chairman and managing director.

Before installation of computers, 60 people were preparing invoices and looking after stock. Now 12 people do the same work.

Valentine's has also introduced a new service with which it plans to supply the complete stationery requirements of a company, through the designing, printing, storing and distribution of all its required stationery forms on a computerized reorder system.

Valentine's computer operation employs 85 people and has three computers which run 24 hours a day for six days a week.

## Maine's State Budget Needs New Approach

AUGUSTA, Maine — Maine state budget officials will soon begin working out a system for computerizing the preparation of the biennial state budget document, according to State Budget Officer Rodney L. Scribner.

Scribner expects the planning of the computer operation to take 18 months.

Scribner and his staff of four worked eight hours a day, seven days a week from Oct. 30 to mid-January preparing the material for the document, which in 1971-72 ran to 650 pages and weighed five pounds.

"It's just too big a mountain of data to process by hand," he said.

## Russians Take a Look At Mine of the Future

Novosti Press Agency

MOSCOW — "The mine of the future is a complex, mechanized and automated enterprise," according to Professor A.S. Burchakov of the Moscow Mining Institute. "It will be computer-controlled."

During the first stage the plans envisage working 11 coal seams with industrial resources of 198 million tons.

The designs for the buildings of the future mine have already been completed and work is under way on experimental models of certain types of equipment.

Labor productivity in this mine, with a capacity of 6.6 million tons of coal a year, or 22,000 tons a day, will be 10 times higher than in operating mines.

One dispatcher will control all underground operations. In front of him will be a large panel with TV screens clearly showing the entire transportation system — from the face to the surface.

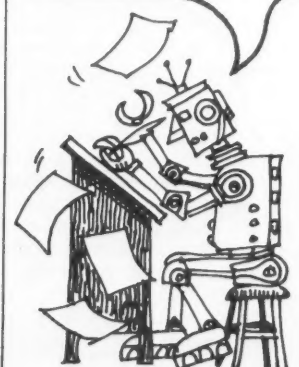
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## CI Notes

### CIA Expects to Grow

ENCINO, Calif. — The Computer Industry Association will be announcing some new members very soon.

The organization, plagued by being called just a representative of the independent peripherals makers, will be adding firms in the software business and in the terminal and data entry markets as well as several other peripherals firms.

The new additions will increase the membership to around 15.

### Singer Gets OCR Patents

NEW YORK — Character Recognition Corp., a subsidiary of The Singer Co., has been assigned two U.S. patents covering technology in the field of optical character recognition (OCR).

"These are landmark patents," according to President William W. Wood Jr.

"We believe that these patents cover a significant portion of the OCR industry. We are currently determining the extent to which these patents affect products already being manufactured by others."

### Series 70 Shipments Grow

BLUE BELL, Pa. — The total value of Univac Series 70 computer shipments during 1972 exceeded \$130 million.

Shipments for the year included 118 Series 70 processors with a sales value of over \$130 million or a monthly rental value of nearly \$2.7 million, the firm said.

Over 90% of the former RCA customers have remained with Univac, a spokesman said.

### STC to Supply CII

LOUISVILLE, Colo. — Storage Technology Corp. will supply Compagnie Internationale Pour l'Informatique (CII) with magnetic tape subsystems for use with CII computers, under terms of an agreement between the two firms.

The value of shipments under this contract will be about \$3 million annually. Shipments will begin in 1973 and extend over a multiyear period.

### Supershorts

Computer Machinery Corp. has signed a distributorship agreement with Yung Hsing Trading Co., Ltd. of the Republic of China for sale and service of CMC Keyprocessing Systems in Taiwan.

MSI Data Corp. and Iomec, Inc. have settled long-standing patent litigation. The litigation involved alleged patent infringement by MSI on three patents owned by Digitronics Corp. and claims by MSI against Digitronics for alleged unfair competition.

Philips Business Systems Inc. has formed a Data Systems Division headquartered in New York City.

## April Trial Delay Seen

# Telex Could Suffer From IBM Counter

By E. Drake Lundell Jr.  
Of the CW Staff

TULSA, Okla. — The countersuit recently filed by IBM against Telex in their antitrust squabble may delay the case or at least put a tremendous burden on the Telex management, sources revealed last week.

The case is scheduled for trial on April 16, but the late filing of the IBM counterclaim may delay that date, sources said, because of the large amount of pretrial work that will have to be put behind the motion.

And, the sources indicated, that may well be the IBM strategy — delay the Telex case as long as possible so a settlement can be arrived at out of court.

### Why the Delay?

The reason for the delay will be the depositions that must be taken from Telex top management in order for the trial to consider the IBM counterclaim. IBM charged that Telex lured away IBM engineering talent with the promise of very large bonuses if they would reveal information proprietary to IBM.

The firm also charged that Telex had violated the copyright laws and had copied some of IBM's copyrighted documents. In all, IBM is seeking damages of \$25 million from Telex.

The deposition process is a long drawn-out affair, where a lawyer from one firm (IBM in this case) questions officers of the other firm concerning the alleged mispractices. The executive being interrogated, of course, must also have a lawyer present during the questioning.

Because it is conducted in a pseudo court-like atmosphere, the evidence garnered in the deposition process is later admissible in the case as if it were taken on the witness stand.

In this case IBM is asking depositions from 138 Telex employees, often the top management of the company.

Because some of these employees are privy to a great deal of data, the questioning could take weeks in each individual case.

With the trial date now just a few

## Telex Says IBM, CDC in Contempt

ST. PAUL, Minn. — Telex has submitted a brief in the federal court here asking that Control Data Corp. and IBM be found in contempt of court for destroying a computerized index compiled by Control Data as part of its antitrust suit against IBM. The index was destroyed as part of the out of court settlement between CDC and IBM.

An IBM spokesman replied: "Telex's latest filing is essentially the same as their earlier motion, and as we said before, is without foundation."

IBM cited the fact that CDC had offered the index to Telex for \$5,000, and Telex had refused the offer.

Meanwhile, back in New York and the Justice-IBM suit, IBM attorney Bruce Bromley has asked Raymond Carlson, attorney for the Justice Department, to substantiate his claim that the destruction of the index has

hampered the government's progress in its antitrust suit [CW, Feb. 7].

Bromley asked that IBM's attorneys be allowed to examine "all the department's records relating to whatever knowledge it had, or use it had made, or intended to make, of CDC's" index. "Similarly we would appreciate seeing any records which indicate in any way the extent to which, if any, you relied upon the so-called CDC data base or any other method of organizing your cases."

In a letter to Judge David Edelstein Bromley defended the destruction of the index, observing that the "materials protected by Pretrial Order No. 1 have been and continue to be scrupulously preserved."

Bromley called the language in Justice's brief on the destruction of the index [CW, Feb. 7] "outrageous."

months away, gathering depositions from 138 witnesses is a monumental task. At least eight separate deposition sessions would have to be held at one time, every day until the trial, and then the process might not even be complete.

Without the deposition process complete, the trial may not start.

The IBM request for the depositions has left Telex in a tough position. Telex wants an early trial, but to complete the depositions it will have to hire lawyers for

each of the eight people being deposed simultaneously. The process will also be a large drain on management talent while it is under way.

However, the late filing of the counterclaim has placed such a large burden on Telex it is hard to see how that firm can comply with the IBM requests and still make the mid-April trial date.

So the betting is that the case will have to be delayed, possibly into the fall, if not later.

## IBM Must Maintain 30s With ITEL Add-Ons, German Court Rules

STUTTGART, W. Germany — The district court here has made permanent an earlier preliminary injunction barring IBM from refusing to maintain its 360/30s with ITEL add-on memory, according to ITEL.

The order included 360/30s currently

installed, or to be installed, with ITEL add-on memory. If IBM violates this order, it is liable to a minimum fine of about \$165,000 and must pay 97% of court and legal costs, court officials noted.

The court ruling stated:

"In particular, the court is convinced that there are no unacceptable technical or economic obstacles to service and maintain a system caused by add-on memory."

"Finally, it has been shown to the satisfaction of the court that the defendant is a company dominating the market of EDP systems and in the meaning of section 26 of the act against restrictions of competition."

A World Trade Corp. spokesman said:

"IBM Germany continues to believe that its reasons for not maintaining its equipment under such conditions are soundly based, and will decide whether to appeal on receipt of the Stuttgart court's detailed explanations of its decision."

## Binger Urges Trade Harmony

PHOENIX — James H. Binger, chairman of Honeywell, Inc., has urged "businessmen, labor leaders and government officials to work for a system of world business that will create jobs all over the world — not in one country to the disadvantage of another."

In his plea for harmony, he stressed the importance of the upcoming talks by U.S. trade negotiators, whose objectives "will remain forlorn hopes" unless they have the "clear backing of the American people and their Congress."

He predicted the protectionist contro-

versy could be resolved positively if the public could come to understand that its self-interest is best served by more liberalized trade policies.

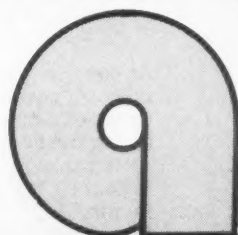
With Congress back in session, the Burke-Hartke bill calling for protectionist measures is generating a considerable amount of discussion.

Hartke, in an effort to demonstrate his willingness to compromise on some points of the bill, this year has introduced the measure as seven separate items, while also leaving the old bill intact.

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## Remote Batch Terminal Shipment Growth Pegged at 39%; Lower Prices Forecast

PALO ALTO, Calif. — The growth rate for remote batch terminals should average 39% yearly for the next few years, growing from shipments of 8,700 units in 1972 to 46,000 units by 1977, according to Creative Strategies Inc., a market research firm here.

The corresponding dollar sales volume will grow at a somewhat slower rate, from \$245 million to \$1.03 billion, due to the anticipated decline in prices over the next five years," the firm added.

### Slump Helped Market

The recent economic downturn appears to have stimulated the growth of remote batch terminals, CSI said. Because of the declining business cycle, many companies have moved to reduce computer costs by centralizing their computer centers, the firm noted, adding that remote batch terminals are widely used in these operations.

In particular, intelligent terminals have spurred the growth of this market sector, CSI said.

Since their introduction only three years ago, intelligent remote batch terminals have captured

over 20% of the market and are expected to have around 50% of the market by 1977, the firm noted.

To date, the commercial trades and services industries are the heaviest users of such terminals, the study said, with the largest share of the shipments in 1972. By 1975, this industry segment will account for around 55% of all shipments of such terminals, it added.

The study indicated there would be "severe" competition within the industry at least through 1977, with IBM expected to control a 70% share of the market for the next five years.

There will be more than 20 other makers of remote batch terminals competing for the remaining 30% of the market, the study projected.

The firm predicted, however, there would be shakeouts among the non-IBM remote batch terminal makers over the next few years so that in 1977 the top six companies will be shipping 95% of the terminals.

The surviving firms in the business must be able to compete in terms of intelligence, peripheral speed and flexibility, price and numerical processing capabilities, the firm indicated, in order to survive in the business.

## Orders & Installations

Michigan Bell Telephone Co. has ordered two computerized telephone traffic data systems from the Alston Division of Conrac Corp. Artemis (Automatic Traffic Engineering and Management Information System) will be used to monitor over 600,000 telephone circuits on a real-time basis.

North Carolina National Bank and the Employment Security Commission of North Carolina have installed GTE Data Services, Inc.'s Automated Tape Library Accounting System. The package monitors the status, location and history of each tape in the user's installation.

Mayo Clinic, Rochester, N.Y., has ordered two Digital Scientific Meta 4/1800 Emulator Computer Systems for its cardiology laboratory.

International Graphics Corp. has ordered Dicom's computerized photo-composition system for production of real estate sales publications for Multiple Listing Service (MLS) groups.

Northeastern University has installed a Control Data Cyber 70 Model 72 for instructional, administrative and research purposes. The system replaces a CDC 3300.

Lenox Candles Inc., Oshkosh, Wis., has installed an NCR Century 200 for order entry and invoicing applications.

The State of New York Office of General Services has installed 768K bytes of Memory Technology, Inc.'s MTI-755 semiconductor memory as main storage for its 155 and 165 computer systems.

The State of Wisconsin has ordered a data entry system from Scan Data for use in the state Motor Vehicle Division for vehicle registrations, accident reports and license renewals.

John Blair & Co., representative of radio-TV stations, has installed a Burroughs B2500 for its broadcasting and graphic divisions.

United Computing Systems, Inc. has ordered 35 Modcomp communications systems from Modular Computer Systems Inc. The systems will be used in United's service network.

E.A. Adams & Son Inc., manufacturer of jewelry findings, has ordered an OS-1500 order entry, retrieval and inquiry system from Datatrol Inc.

The Midwest City Memorial Hospital, Midwest City, Okla., has installed an NCR Century 50 to handle payroll and patient accounting.



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## Bucked the Trend

# Minimaker Glad It Decided to Stay OEM

By E. Drake Lundell Jr.

Of the CW Staff

IRVINE, Calif. — When other minicomputer makers were busily scrambling to get into the end user marketplace during the recession, Computer Automation Inc. stuck to its guns and kept all of its resources on the OEM side of the business.

It appears the philosophy has paid off for the firm, which is shipping almost four times as many minis this year as it did last, jumping from an annual level of 500 devices to almost 2,000.

The firm, according to President David Methvin, "has done reasonably well" over the past few years, although the slowdown in capital equipment expenditures that came with the recession did slow the business from the levels it had expected.

He indicated there is a long lead time in the OEM marketplace while the computer systems are being designed into other products.

### Cost Effective

But at the same time, he said, marketing to OEMs is extremely cost effective. Once the equipment is designed into the system, the manufacturer is unlikely to change vendors and will require large production volumes of the units over the life of his product.

"Typically in these configurations, the minicomputer only represents 5% to 20% of the total cost of the system. We understand how to build the minicomputers, but we do not understand all of the rest of the business. That we leave to a firm which is already established in the field and knows what the customers want," he added.

Although the minicomputer cannot be viewed in the same way as other components, it can be marketed like a component for these types of systems, he said.

While the OEM customer requires a lot of support, Methvin indicated, that support is for an initial time period. The vendor provides the support in the field to a large user base.

Therefore, he said, salesmen in the OEM market can cover more bases than would be possible in the end user market and servicemen can be similarly spread around.

In addition, the OEM market is strictly one of cash without lease plans which tend to defer a firm's earnings until some future date and which make the business highly capital intensive.

### Elastic Market

The size of the OEM market is truly elastic, according to Sol Zasloff, vice-president of marketing for the firm. "When the price of a minicomputer drops by 50%," he said, "the market doesn't just double, it increases 10 times."

This is because, Zasloff said, the lower price opens up a whole new range of applications that previously could not take advantage of computer technology because of price factors.

"If the user finds that he can use a minicomputer as cheaply as hardwired logic and get more capability, then it becomes competitive in an application area where it was not before," he indicated.

The real growth in the market will come in these new application areas, Computer Automation executives agreed, rather than in the traditional lines of the minicomputer business.

When the price gets low enough, you can visualize minicomputers in every bank, in every gas station or even in every car wash for certain functions, they indicated.

And prices are continuing to drop rap-

### Wabash Computer to Close

WABASH, Ind. — Just four months after writing off its Computer Network Division, Wabash Magnetics Corp. has decided to go the same route with another subsidiary, Wabash Computer Corp.

The writeoff of all remaining capitalized engineering and development costs will result in a special charge of about \$835,000 on 1972 earnings.

idly, Methvin said. For example, he noted, a machine that costs around \$3,500 today will probably be priced at half that within a year and the prices will "keep dropping."

One advantage of staying strictly an OEM supplier, Methvin said, is that Computer Automation can guarantee any of its customers that it will not be competing with them in the end user sector of the market, which is important to many customers who fear competition from their vendors.

### Picking and Choosing

However, he noted, the firm might go into some well-selected end user markets. It already has to a limited extent with the Capable tester, but he noted this was just an outgrowth of its own in-house system and that it did not compete with any OEM that Computer Automation served.

In addition, he said, the firm would only enter markets where the computer is the major component of the system — not 20% but rather 80% of the cost of making the system.

With that type of equation, he noted, a systems house or other manufacturer could not afford to make the system since the value they would be adding would be very small.

## Foreign Orders & Installations

Conzinc Riotinto Ltd., an Australian mining firm, has ordered a Univac 1106 for use in processing work presently handled by service bureaus.

Sanders Associates, Inc. (UK) Ltd. has installed an automated data entry system with video display terminals at the United Dominions Trust, Ltd., London.

Teledyne Inet has delivered 157 Uninterruptible Power Systems (UPS) to the Postal and Telegraph Service of India for a network of microwave telephone stations.

The New Forest Rural District Council, Hants, England, has ordered an NCR Century 100, which it will share with the Lymington Borough Council and the Ringwood & Fordingbridge Rural District Council.

The Commonwealth Scientific and Industrial Research Organization (CSIRO) of Australia has ordered a Control Data Corp. Cyber 70 Model 76 system to support the research activities of scientists throughout Australia. CSIRO's CDC 3600 will be connected to the system via satellite couplers and will control terminals linked to the network.

Control Data Corp. has delivered a CDC 3170 system to the Student Union of the University of Oslo, Norway, for use in health service, travel agency and student housing activities.

An IBM 370/155 has been delivered to Lloyd's Register of Shipping, London, to replace a 360. The 370 will be used for structural and engineering data analysis, and monitoring of survey records.

If your company has an IBM 370 computer system on order or is considering ordering one in the near future, explore the leasing terms available from DPF.

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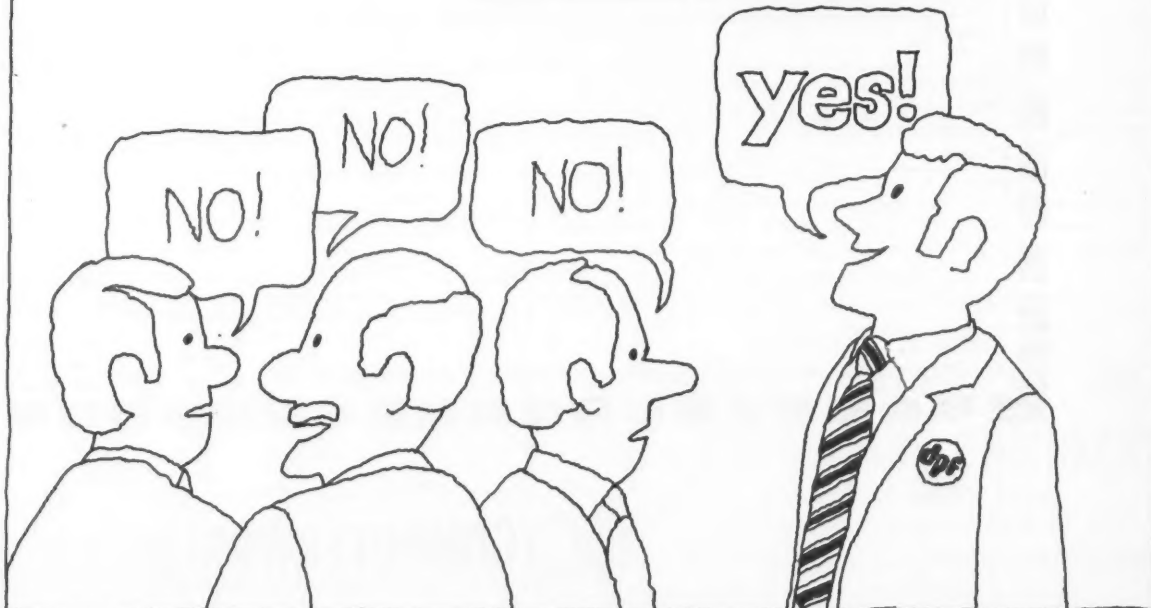
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## Improved DP Contributions

# Honeywell, CDC Report Record Earnings for Year

Two more mainframe makers, Honeywell and Control Data Corp., have confirmed earlier reports that 1972 was indeed a good year for the mainframe segment.

Both reported record earnings, with improved contributions from the firms' computer businesses.

Control Data's computer business, overshadowed by the abundance of revenues produced by Commercial Credit Co., has stepped out of the darkness after two years of producing deficits

and divulged a hefty contribution to the firm's record earnings for the year ended Dec. 31.

Computer business revenue totaled \$664 million, up 16% from 1971. Rental and services revenue rose 24% to \$277 million, "reflecting continuing emphasis on the rapidly growing services segment of the market," according to President William C. Norris.

Earnings from CDC's computer segment reached \$10.3 million, contrasted with losses of \$9.9 million in 1971 and \$36.1 mil-

lion in 1970.

Total computer order volume rose 13%, with "services and peripheral equipment particularly strong," the company said.

Commercial Credit Co. kept on producing, with earnings of \$55.6 million, up from \$50.2 million in 1971.

For the company as a whole, earnings for the year jumped 74% to \$62.4 million or \$4.06 a share from \$35.8 million, or \$2.37 a share in 1971.

In the fourth quarter, earnings increased 56% to \$16.7 million from \$9.4 million.

### Special Credit

A \$1.9 million special credit, equal to 13 cents a share in 1972 resulted from a tax-loss carry-forward of some international subsidiaries plus recovery of the prior year's expenses related to the CDC-IBM lawsuit settled in January.

### Honeywell Performance

Honeywell had a record fourth quarter and year ended Dec. 31, with computer operations cited as one of the segments making a greater contribution to earnings.

Computer business accounted for 50% of Honeywell's total business in 1972 compared with 49% in 1971. Worldwide sales and rental revenues reached \$1.06 billion, up 12% from \$950 million a year ago. Rental and service revenues increased 5%, to \$601 million.

The success of the company's Series 6000 and 2000 computers

and the strength in the remainder of the product line contributed to a healthy increase in both bookings and backlog and particularly heavy net shipments in the fourth quarter, according to Chairman James H. Binger.

For the year net shipments increased over 20%, which should contribute to growth in recurring revenues during 1973.

Binger credited strong performances by Honeywell's French and Italian computer operations with offsetting the effects of a strike in the company's Scottish computer factories.

Total worldwide sales, rental and service revenues rose 9% to \$2.13 billion, compared with \$1.95 billion in 1971. Earnings, including extraordinary items, increased 19% to \$82.3 million or \$4.38 a share from \$69.2 million or \$3.88 a share.

Fourth-quarter earnings of \$40 million, equal to \$2.12 a share, compared with \$36.5 million or \$2.02 a share in the comparable period a year earlier. In the quarter, sales increased to \$631 million from \$581 million.

Extraordinary items in the fourth quarter amounted to \$2.8 million or 14 cents a share, compared with \$1.3 million or 7 cents a share in the fourth quarter of 1971, and for the year amounted to \$5.7 million or 30 cents a share, compared with \$3.6 million equal to 20 cents a share a year ago.

All aspects of the company's business performed well with the

exception of its control systems operations in Europe, which failed to produce a profit because of a costly strike and adverse business conditions in Honeywell's markets in Germany and the UK, Binger said.

Strong performances in the homes and larger building markets, and a surge in the business of the Micro Switch Division domestically also contributed to the earnings improvement, he said.

Other factors were a reduced tax rate and reduced net interest expenses, reflecting in part increased interest income from long-term receivables, he added.

## Strong Fourth Quarter Helps IteI Show \$1.8 Million Earnings for '72

SAN FRANCISCO — IteI Corp. entered the fourth quarter with a nine-month loss of \$5.9 million and finished the year in the black, to the tune of about \$1.8 million in earnings.

Revenues for the year totaled about \$100 million, President Peter Redfield estimated.

About one third of IteI's 1972 revenue was generated by 360 leases, Redfield said. He expects this source will account for about 20% of 1973 revenue.

### Special Charge Offset

IteI is setting up a reserve against earnings from its 360 computers, which will result in a special charge of about \$900,000 for 1972. A \$1.2-million tax credit will offset the charge.

The reserve charge was established "for possible future changes in operating results due to technological developments," he said.

In 1973, Redfield estimates the charge against earnings will be \$2 million to \$3 million on revenue of \$140 million to \$150 million.

He predicted 1973 operating earnings will exceed \$7.4 million or \$1.10 a share, and said IteI probably will take tax credits or other gains in an amount equal to the special charge.

In 1971, the firm showed a loss of \$5.9 million after a loss from discontinued operations. Operating profits, before the charge, totaled \$9.1 million on revenue of \$101.2 million.

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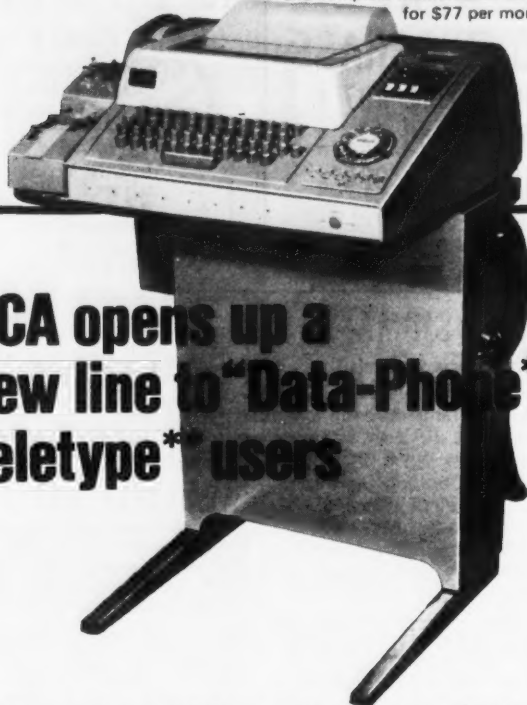
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# RCA

## New Registrations

BRANDON APPLIED SYSTEMS, INC., 1700 Broadway, New York, N.Y., data processing consultant and systems designer, filed to register 200,000 shares of common at \$1.25 per share.

GENERAL AUTOMATION INC., 1055 S. East St., Anaheim, Calif., developer and producer of industrial and commercial systems, filed to register 420,000 shares of common. Proceeds, at \$37 per share maximum, to be used to repay short-term bank borrowings and provide working capital. The underwriter is Reynolds Securities Inc., 120 Broadway, New York, N.Y. 10005.

COMPUSIZE, INC., 245 Livingston St., Northvale, N.J., producer of computer-designed sewing patterns, filed to register 383,333 shares of common. Proceeds, at \$7 per share, to be used to reduce bank debts and to provide working capital. The underwriter is Denis McCauley & Co., Inc., 730 Second Ave., S., Minneapolis, Minn. 55402.

CROYLE COMPUTER SERVICES, INC., 2 W. Northern Ave., Phoenix, Ariz., a computer maintenance firm, filed to register 500,000 shares of common. Proceeds, at \$10 per share, to be used for working capital. No underwriter is involved.

STANDARD LOGIC, INC., 2215 S. Standard Ave., Santa Ana, Calif., designer and manufacturer of digital components, filed to register 3,750 shares of common at \$8 per share maximum, and 150,000 shares of common, with warrants to purchase 75,000 shares of common, to be offered for sale in units, each consisting of two shares and one warrant. Proceeds, at \$20 per unit maximum, to be used to reduce bank debts and for working capital. The underwriter is Muller and Co., 80 Pine St., New York, N.Y. 10005.

MCI COMMUNICATIONS CORP., 1150 17th St., N.W., Washington, D.C., specialized common carrier, filed to register 975,000 shares of common, in exchange for outstanding shares of Microwave Communications, Inc., at the rate of 4-1/2 shares for each Microwave share.

APPLIED LOGIC CORP., 900 State Road, Princeton, N.J., filed to register 600,000 shares of common to be issued pursuant to the company's stock option and related plans.

BURROUGHS CORP., Burroughs Place, Detroit, Mich., filed to register 102,852 shares of common issuable upon conversion of the 3-3/4% convertible unsecured loan stock 1977/82 of Burroughs Machines Ltd., a wholly-owned subsidiary.

RICCA DATA SYSTEMS INC., 1732 Reynolds Ave., Santa Ana, Calif., manufacturer of point-of-sale and credit authorization systems, filed to register 250,000 shares of common. Proceeds, at \$5 per share, to be used to retire short-term loans and for working capital. The underwriter is Meis & Co. Inc., 23 E. Pikes Ave., Suite 221, Burns Bldg., Colorado Springs, Colo. 80902.

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## Telex Runs Off Booming Third Quarter

TULSA, Okla. — Telex added a booming third quarter to its track record, and emerged with a nine-month report that is slightly ahead of last year's.

In the quarter ended Dec. 31, earnings reached \$862,000 or 8 cents a share compared with \$172,000 or 2 cents a share in the year-ago period.

Revenues soared to \$26.5 million from \$16.6 million last year.

The sales value of peripheral equipment placed in the field

was up, to \$27.6 million from \$11.5 million in the same year-ago period, but income from peripheral equipment on rent declined slightly, to \$2.6 million from \$2.7 million last year.

The sales value of the order backlog declined to \$21.9 million from \$55.4 million in the same period a year ago.

Losses from the European operations were cut to \$5,000 from \$200,000 in the same quarter last year.

In the nine months, earnings

totaled \$2.3 million or 22 cents a share compared with \$2.9 million or 28 cents a share in the period ended Dec. 31, 1971.

Revenues rose to \$67.5 million from \$61 million last year.

The sales value of peripheral equipment placed in the field rose to \$63.9 million from \$51.6 million, and lease income rose slightly to \$7.9 million from \$7.1 million.

## Nickels & Dimes

Shipments were up at Data 100 for the year and last quarter ended Dec. 31. On an "if sold dollar value," 1972 shipments totaled \$31.5 million compared with \$13.1 million in 1971. The firm expects to show a profit in the fourth quarter of 1972.

\$\$\$  
About 78% of Xiox International's income stemmed from

leasing and brokerage of IBM equipment, the firm's first move in a diversification program.

\$\$\$  
Reynolds & Reynolds chalked up its 11th successive year of record sales and earnings, with sales of \$57.2 million and earnings of \$5.1 million in the year ended Sept. 30.

## REI Revenues Increase in 1972

DALLAS — Recognition Equipment has largely completed efforts to recover from the effects of subsidiary and affiliate commitments made prior to 1970, and has begun to focus primarily on the future, according to President Herman L. Philipson Jr.

Last year's report has been restated to include the results of 49%-owned Corporation S, based on the equity method of accounting.

Results of Corporation S accounted for a \$785,484 charge in 1972, and a \$1.7 million charge in 1971 as restated.

### 'Critically Review'

Earnings for the year ended Oct. 31 totaled \$342,479 or 7 cents a share compared with the restated \$308,794 or 6 cents a

share in the year before. As originally reported, REI earned \$487,479 in 1971.

Revenues rose to \$43 million from \$38.6 million last year.

The modest level of 1972 earnings reflects a determination to critically review and conservatively value inventories, Philipson said. During fiscal 1972, REI inventory write-offs totaled \$4.7 million, \$2.1 million more than in 1971.

REI's liquidity improved during the year, with assets rising \$6.4 million from a year earlier to \$13.2 million of cash and equivalent, he said.

A record backlog of contracts, valued at \$20.5 million, 32% greater than last year, was recorded at the end of the fiscal year. This figure excludes \$4.4 million of postal contracts.

Although commercial shipments declined by \$600,000, total shipments were slightly higher than the \$20.7 million in 1971 because of delivery of the company's first major postal letter-processing system.

## Profitable Year Beehive's First

SALT LAKE CITY — Beehive Medical Electronics, Inc. chalked up its first profitable year, aided by a 150% increase in sales.

The first quarter of fiscal 1973 was also bright, with earnings rising to \$88,027 or 9 cents a share compared with year-ago figures of \$12,138 or 1 cent a share.

Revenues reached \$705,770, up from \$392,815 in the year-ago period.

In the year ended Sept. 30, sales totaled \$2 million compared with \$798,839 in 1971. Earnings reached \$87,865 or 9 cents a share, compared with the previous year's loss of \$323,227 or 17 cents a share.

"The reversal in our company's earnings picture, while reflecting the general upturn in the nation's economy, also points to a mounting acceptance of modestly priced computer systems and peripheral equipment by the medical community and industry at large that has helped double sales each year since our company's inception," President Warren B. Clifford observed.

Sales backlog at the beginning of fiscal 1973 was over \$3 million, Clifford said.

Foreign markets represent about 7% of total sales. "As the markets for our products grow, we feel certain that a substantial increase will be realized in our worldwide sales efforts," Clifford added.

The firm expenses all research and development costs when incurred, which, Clifford said, "leaves our balance sheets clear and uninflated."

## BUY IT OR LEASE IT

### IBM 360/30

NVC Purchase: \$64,000.00

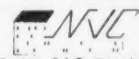
NVC 36 mo. Lease: \$1,750.00/mo. (IBM MAC: \$3,685.00/mo)

QUANTITY	MODEL/FEATURE	SERIAL NO.
1	360/30E (32K-1.5 mic) 3237, 4427, 4456, 4463 4468, 4760, 6960, 7915	15621
1	1051	51410
1	3130, 4409, 4410, 4411	
1	1052 8	62543

If desired NVC will provide a 36 mo. Lease/Purchase Plan. 36 Mo. Rate: \$1,980.00/mo. Purchase Option: \$6,200.00

- Equipment acceptable for IBM Maintenance Agreement.
- Available for installation April 15, 1973.
- Lease rates are exclusive of maintenance and taxes but do include transportation to the installation site and installation.

Write or Call Collect — TODAY



COMPUTER SALES, INC.

Suite 618 Benjamin Fox Pavilion, Jenkintown, Pa. 19046  
(215) 887-5404

## frequency division multiplexer

### FEATURES...

INDICATORS: Multi-colored display panel provides indication of four control and two data functions.

MULTI-DROP: Drop one or more channels at a number of locations.

MULTIPLE ACCESS: Multi-drop channels have equal opportunity contention for processor channels.

BUSY-OUT: Busy-Out control of remote modems.

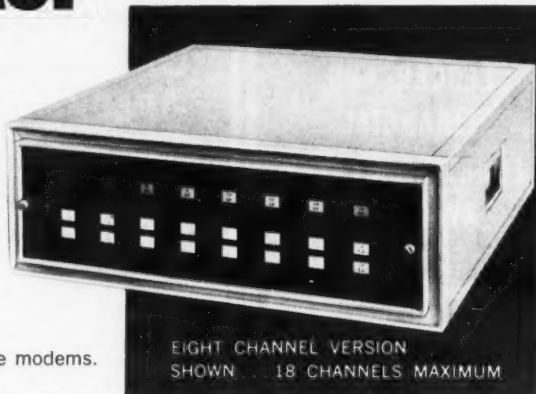
LOOP-BACK: Test features provide rapid system diagnostics.

DATA RATES: Mix 110, 150 and 300 baud channels.

CONTROLS: Processes all modem control functions.

VOICE-PLUS-DATA: Simultaneous voice channel with four data channels.

OPTIONS: Many other optional features.



EIGHT CHANNEL VERSION SHOWN 18 CHANNELS MAXIMUM

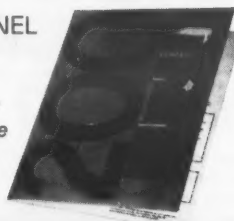
### SAVE 4-WAYS

- 1 No high speed modems required.
- 2 No private line conditioning required.
- 3 Modular construction permits starting with one channel and adding others as needed.
- 4 Eliminate long distance phone calls with voice-plus-data.

**\$465** BASIC UNIT **\$325** PER CHANNEL END  
\$15.80 PER MONTH\* \$11.00 PER MONTH\*

\*3 Year Lease with Purchase Option

Send for  
FREE Brochure  
today.



Data Channel Concentrators and Expanders, Modems,  
Line Test Units and other Data Communication Equipment

## COMDATA CORPORATION

7544 W. OAKTON ST. □ NILES, ILLINOIS 60648 □ 312/692-6107

## AJ630



Here's a printer  
terminal that's

## QUIET

(No impacting of paper)

## FAST

(Up to 30 characters per second)

## RELIABLE

(All solid state)

It's the AJ630 Solid State Keyboard Printer Terminal that offers selectable printing speeds of 10, 15, or 30 characters per second. Here are just two of the many features: (1) a wide carriage — 140 characters per line; (2) remote setting of tabs by the computer. More features and the complete story are in the AJ630 Brochure. Write for it now. Better yet, ask for a quiet demonstration. You'll see why...

you're in better company with

**ANDERSON  
JACOBSON**

1065 Morse Avenue ■ Sunnyvale  
California 94086 ■ (408) 734-4030  
Sales offices in principal cities throughout the U.S.A.





# Computerworld Stock Trading Summary

All statistics  
compiled, computed  
and formatted by  
TRADE\*QUOTES, INC.  
Cambridge, Mass. 02139

CLOSING PRICES THURSDAY, FEBRUARY 8, 1973

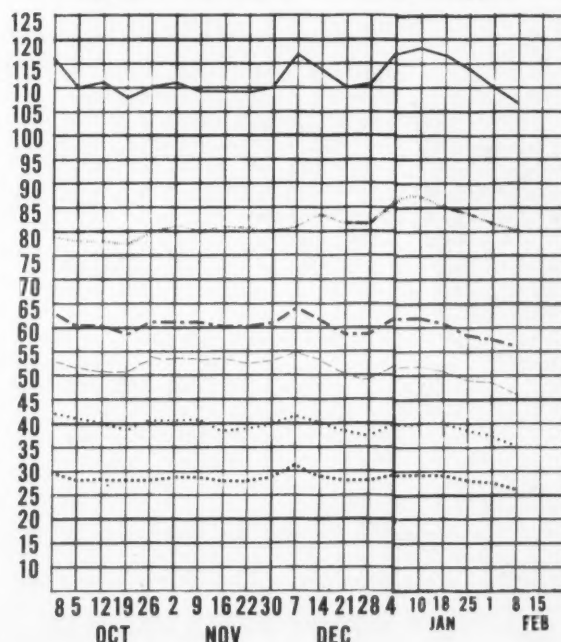
E X C H	1972 RANGE (1)	CLOSE FEB 08 1973	WEEK NET CHNGE	WEEK PCT CHNGE
SOFTWARE & EDP SERVICES				
O ADVANCED COMP TECH	1- 3	1 3/4	- 1/4	-12.5
A APPLIED DATA RES.	3- 7	3 1/8	- 1/8	-3.8
O APPLIED LOGIC	1- 4	3	+ 1/4	+9.0
N AUTOMATIC DATA PROC	70- 99	73	+ 1/8	+0.1
O BRANDON APPLIED SYST	1- 2	5/8	- 1/8	-16.6
O COMPUTER DIMENSIONS	4- 14	3 1/2	0	0.0
O COMPUTER DYNAMICS	1- 4	7/8	- 1/8	-12.5
O COMPUTER NETWORK	3- 7	3	- 1/4	-7.6
N COMPUTER SCIENCES	4- 10	4 1/4	- 1/8	-2.8
O COMPUTER TASK GROUP	1- 2	1 3/8	- 1/8	-8.3
O COMPUTER TECHNOLOGY	2- 8	2 1/8	- 1/4	-10.5
O COMPUTER USAGE	7- 14	7 3/8	- 3/8	-4.8
N COMPUTING & SOFTWARE	11- 28	10 7/8	- 1/8	-1.1
O COMRESS	1- 3	1	0	0.0
O COMSHARE	5- 10	7 5/8	- 1/2	-6.1
O DATATAB	4- 9	3 5/8	- 1/8	-3.3
A EDP RESOURCES	2- 8	1 3/4	0	0.0
A ELECT COMP PROG	1- 5	1 1/2	- 1/8	-7.6
N ELECTRONIC DATA SYS.	43- 65	49 1/2	- 2	-3.8
O INFORMATICS	4- 11	4	- 1/2	-11.1
O I.O.A. DATA CORP	1- 3	1/2	- 1/8	-20.0
O KEANE ASSOCIATES	4- 7	3 3/4	0	0.0
O KEYDATA CORP	7- 13	9 5/8	- 1/8	-1.2
O LOGICON	4- 9	3 7/8	+ 3/8	+10.7
A MANAGEMENT DATA	4- 10	3 1/2	- 1/4	-6.6
O NATIONAL CSS INC	8- 36	32 3/8	+ 1/8	+0.3
O NATIONAL INFO SRVCS	1- 5	1 3/4	- 1/4	-12.5
P ON LINE SYSTEMS INC	8- 28	24 1/4	0	0.0
N PLANNING RESEARCH	5- 17	4 5/8	- 1/4	-5.1
O PROGRAMMING METHODS	20- 25	23	+ 1/2	+2.2
O PROGRAMMING & SYS	1- 2	7/8	- 1/8	-12.5
O RAPIDATA INC	5- 27	22 1/4	- 1/4	-1.1
O SCIENTIFIC COMPUTERS	2- 4	1 1/2	- 1/8	-7.6
O SIMPLICITY COMPUTER	1- 5	3 1/4	- 1/8	-3.7
O TBS COMPUTER CENTERS	3- 6	3 1/2	0	0.0
O TCC INC	1- 3	1/2	- 1/4	-33.3
O TYMSHARE INC	7- 12	9 3/8	- 3/8	-3.8
O UNITED DATA CENTER	5- 8	5 1/4	- 3/4	-12.5
N UNIVERSITY COMPUTING	7- 26	7 7/8	+ 1/8	+1.6
A URS SYSTEMS	6- 10	5 7/8	- 3/8	-6.0
PERIPHERALS & SUBSYSTEMS				
N ADDRESSOGRAPH-MULT	24- 49	24 1/4	-2 3/8	-8.9
O ADVANCED MEMORY SYS	12- 23	18 1/4	-1 3/8	-7.0
N AMPEX CORP	5- 15	6 3/8	+ 1/4	+4.0
O ANDERSON JACOBSON	4- 8	5	+ 1/4	+5.2
O BEEHIVE MEDICAL ELEC	1- 8	6 3/8	+ 1/8	+2.0
A BOLT, BERANEK & NEW	5- 21	9 3/4	- 1/4	-2.5
N BUNKER-RAMO	8- 14	8 3/8	- 1/8	-1.4
A CALCOMP	9- 25	11 1/8	+ 3/8	+3.4
O CAMBRIDGE MEMORIES	9- 15	10 3/8	- 7/8	-7.7
O CENTRONICS DATA COMP	6- 28	24 1/4	+ 1/2	+2.1
O CODEX CORP	6- 25	16	-1	-5.8
O COGNITRONICS	2- 5	1 5/8	- 1/2	-23.5
O COMPUTER COMMUN.	1- 7	2 7/8	- 1/4	-8.0
A COMPUTER EQUIPMENT	2- 4	2 3/8	- 1/4	-9.5
O COMPUTER MACHINERY	7- 13	10 5/8	+ 1/8	+1.1
O COMPUTER TRANSCIVER	2- 9	3 7/8	+ 1/8	+3.3
A COMPUTEST	3- 9	3 1/2	- 1/4	-6.6
N CONRAC CORP	24- 39	25	-1	-3.8
A DATA PRODUCTS CORP	3- 7	3 3/8	- 1/2	-12.9
O DATA RECOGNITION	1- 5	2 1/2	0	0.0
O DATA TECHNOLOGY	2- 5	4 1/8	+ 3/8	+10.0
O DI/AN CONTROLS	0- 8	3 7/8	0	0.0
N ELECTRONIC M & M	3- 8	3 3/4	- 3/4	-16.6
O FABRI-TEK	2- 5	3 1/2	- 3/4	-17.6
O GENERAL COMPUTER SYS	6- 16	7	- 1/2	-6.6
N GENERAL ELECTRIC	59- 74	67 1/2	-1	-1.4
N HAZELTINE CORP	7- 13	8 3/8	- 1/8	-1.4
O INFOTEX INC	16- 36	15 1/2	-1 7/8	-10.7
O INFORMATION DISPLAYS	0- 0	1 1/8	+ 1/4	+28.5
O INFORMATION INTL INC	8- 25	12 1/2	+1	+8.6
A LUNDY ELECTRONICS	7- 14	7	-1 1/8	-13.8
O MANAGEMENT ASSIST	1- 1	3/8	+ 1/8	+50.0
A MILGO ELECTRONICS	15- 44	23 3/8	+1 3/8	+6.2
N MOHAWK DATA SCI	8- 27	8 1/4	-1	-10.8
O ODEC COMPUTER SYST.	4- 12	4	- 5/8	-13.5
O OPTICAL SCANNING	4- 16	3 3/4	-1 1/4	-25.0
O PERTEC CORP	6- 17	6 1/4	- 3/8	-5.6
O PHOTON	3- 15	3 3/8	0	0.0
A POTTER INSTRUMENT	7- 21	8	- 1/4	-3.0
O PRECISION INST.	2- 13	4	+1 1/2	+60.0
O RECOGNITION EQUIP	5- 15	6 5/8	+ 1/8	+1.9
N SANDERS ASSOCIATES	13- 21	12 1/2	-1 1/4	-9.0
O SCAN DATA	3- 13	3 3/8	- 1/8	-3.5
O STORAGE TECHNOLOGY	17- 39	25 1/4	-2 1/4	-8.1
O SYCOR INC	7- 11	9 1/4	- 3/4	-7.5
O TALLY CORP.	8- 15	12 1/8	+1	+8.9
N TEKTRONIX INC	34- 64	46	-3 3/8	-6.8
N TELEX	4- 15	4 3/8	- 5/8	-12.5
O WILTEK INC	10- 26	15 3/4	0	0.0
SUPPLIES & ACCESSORIES				
O BALTIMORE BUS FORMS	5- 9	6 1/2	- 3/4	-10.3
A BARRY WRIGHT	9- 14	9 7/8	- 1/8	-1.2
A DATA DOCUMENTS	17- 26	20 1/2	- 7/8	-4.0
O DUPLEX PRODUCTS INC	8- 16	8	- 1/4	-3.0
N ENNIS BUS. FORMS	6- 10	7 1/8	- 3/8	-5.0
O GRAHAM MAGNETICS	15- 27	17 1/2	- 1/4	-1.4
O GRAPHIC CONTROLS	11- 15	11 7/8	+ 3/4	+6.7
N 3M COMPANY	76- 88	83 3/8	+1 1/8	+1.3
O MOORE CORP LTD	42- 57	56 1/4	- 1/8	-0.2
N NASHUA CORP	48- 62	55 1/8	- 1/8	-0.2
O REYNOLDS & REYNOLD	37- 77	46	-1 1/2	-3.1
O STANDARD REGISTER	14- 20	19	- 1/2	-2.5

E X C H	1972 RANGE (1)	CLOSE FEB 08 1973	WEEK NET CHNGE	WEEK PCT CHNGE
COMPUTER SYSTEMS				
N BURROUGHS CORP	147-230	223 3/4	+4	+1.8
N COLLINS RADIO	14- 27	20 1/2	-2 1/2	-10.8
N CONTROL DATA CORP	43- 78	54	-1 1/8	-2.0
O DATA GENERAL CORP	56-130	118	-2	-1.6
O DIGITAL COMP CONTROL	4- 25	3 3/4	- 3/4	-16.6
N DIGITAL EQUIPMENT	72-101	97 1/4	+1	+1.0
N ELECTRONIC ASSOC.	6- 13	7 1/4	-1	-12.1
A ELECTRONIC ENGINEER.	6- 14	8 3/8	+ 3/8	+4.6
N FOXBORO	23- 41	28 5/8	- 7/8	-2.9
O GENERAL AUTOMATION	13- 54	48 1/2	-3 3/4	-7.1
O GRI COMPUTER CORP	2- 5	2 3/8	- 1/8	-5.0
N HEWLETT-PACKARD CO	46- 94	87 1/2	-1 1/4	-1.4
N HONEYWELL INC	118-170	119 5/8	- 1/8	-0.1
N IBM	333-444	437 1/2	+8 1/2	+1.9
O INTERDATA INC	8- 16	10 1/4	- 3/8	-3.5
N MEMOREX	13- 38	12 1/2	-1 1/8	-8.2
O MICRODATA CORP	5- 10	8 1/2	0	0.0
N NCR	27- 38	27 3/4	- 1/2	-1.7
N RAYTHEON CO	27- 47	30 3/8	- 1/2	-1.6
N SPERRY RAND	30- 50	45 7/8	+2 3/4	+6.3
A SYSTEMS ENG. LABS	6- 16	5 7/8	+ 3/8	+6.8
N VARIAN ASSOCIATES	14- 22	15 5/8	-1 3/8	-8.0
N WANG LABS.	23- 61	28 3/4	- 1/4	-0.8
N XEROX CORP	121-172	152 1/4	+1 1/4	+0.8
LEASING COMPANIES				
A BOOTHE COMPUTER	3- 18	2 5/8	0	0.0
O BRESNAHAN COMP.	1- 3	1 1/4	- 1/8	-9.0
O COMDISCO INC	3- 18	14 1/4	+ 5/8	+4.5
O COMMERCE GROUP CORP	5- 11	4 5/8	- 1/4	-5.1
O COMPUTER EXCHANGE	1- 3	5/8	0	0.0
A COMPUTER INVSTRS GRP	6- 14	6	- 1/8	-2.0
O COMP. INSTALLATIONS	2- 5	2	0	0.0
N DPF INC	5- 13	7 3/4	+ 1/4	+3.3
M DATRONIC RENTAL	2- 4	2 1/4	+ 1/8	+5.8
A DCL INC	2- 10	2 1/4	- 1/8	-5.2
A DEARBORN-STORM	16- 26	21	- 3/4	-3.4
A DPA, INC.	5- 8	6 3/4	- 1/8	-1.8
A GRANITE MGT	5- 11	5 1/4	- 1/8	-2.3
A GREYHOUND COMPUTER	5- 11	5 1/4	+ 1/4	+5.0
A ITTEL	7- 12	9 3/8	- 5/8	-6.2
N LEASCO CORP	12- 24	12	-1	-7.6
O LEASAC CORP	6- 15	6	- 1/4	-4.0
O LECTRO MGT INC	1- 4	1 5/8	- 1/8	-7.1
A ROCKWOOD COMPUTER	2- 7	2 1/8	- 1/4	-10.5
O SYSTEMS CAPITAL	3- 20	9 7/8	- 1/2	-4.8
N U.S. LEASING	19- 35	30	-2	-6.2

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE  
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER  
P=PHIL-BALT-WASH  
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID  
(1) TO NEAREST DOLLAR

## Computer Stocks Trading Index

Computer Systems      Software & EDP Services  
Peripherals & Subsystems      Leasing Companies  
Supplies & Accessories      CW Composite Index



## Earnings Reports

### DEARBORN-STORM

Year Ended Oct. 31

	1972	1971
Shr Ernd	\$1.85	\$1.44
Revenue	44,405,000	38,092,000
Earnings	4,990,000	3,884,000
3 Mo Shr	.53	.40
Revenue	10,770,000	10,071,000
Earnings	1,430,000	1,073,000

### BRANDON APPLIED SYSTEMS

Six Months Ended Aug. 31

	1972	1971
Shr Ernd	\$0.01	\$0.01
Revenue	245,470	343,852
Earnings	6,654	9,120

### IBM

Year Ended Dec. 31

	1972 (000)	1971 (000)
Shr Ernd	\$11.03	\$9.38
Revenue	9,532,593	8,273,603
Earnings	1,279,268	1,078,847
3 Mo Shr	2.93	2.66
Revenue	2,521,729	2,379,758
Earnings	340,427	306,019

a-Preliminary.

### VARIAN ASSOCIATES

Three Months Ended Dec. 29

	1972	1971
Shr Ernd	\$2.0	\$0.07
Revenue	54,798,000	46,412,000
Spec Cred	.....	258,000
Earnings	1,452,000	502,000

### BURROUGHS

Year Ended Dec. 31

	1972 (000)	1971 (000)
Shr Ernd	\$4.71	\$4.03
Revenue	1,052,783	943,276
Earnings	87,541	74,151
3 Mo Shr	2.08	1.82
Revenue	330,053	294,615
Earnings	38,690	33,603

### XEROX

Year Ended Dec. 31

	1972 (000)	1971 (000)
Shr Ernd	\$3.16	\$2.71
Revenue	2,420,000	1,960,000
Earnings	249,500	213,000
3 Mo Shr	.83	.73
Revenue	653,000	519,000
Earnings	66,000	57,000

### NUCLEAR DATA

Three Months Ended Nov. 30

	1972	1971
Revenue	\$3,802,444	\$2,303,887
Loss	1,342,615	1,755,758
9 Mo Rev	10,427,514	7,062,737
Loss	2,686,493	1,728,937

a-After a writeoff of approximately \$1 million in the third quarter resulting from introduction of new products that accelerated obsolescence of certain inventory.

### APECO

Year Ended Nov. 30

	1972	1971
Shr Ernd	\$0.31	\$0.64
Revenue	120,538,700	109,730,000
Spec Chg	640,400	.....
Earnings	3,233,300	6,395,000

a-Restated to reflect acquisition on a pooling-of-interests basis. b-Loss related to flood damage in Pennsylvania mobile home plants.

### APPLIED MAGNETICS

Three Months Ended Dec. 31

	1972	1971
Shr Ernd	\$0.10	\$0.07
Revenue	10,389,200	5,632,100
Earnings	425,125	282,550

a-Not including operations of Geospace Corp., acquired in April 1972 on a purchase basis.

### CENTRONICS DATA

Three Months Ended Sept. 30

	1972	1971
Shr Ernd	\$0.26	\$0.07
Revenue	3,560,000	953,738
Earnings	667,000	167,960

### COMPUTER RESPONSE

Nine Months Ended Sept. 30

	1972	1971
Shr Loss	\$0.07	\$0.13
Revenue	614,503	666,186
Spec Item	a1,606	b(33,861)
Loss	164,289	335,058



# Hazeltine 2000...Big Man on more than 70 Campuses!

Educators and Administrators all over the country are using the Hazeltine 2000 in a wide variety of cost-cutting applications, including on-line registration, programming instruction, pure and applied research and engineering development.

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## Hazeltine Corporation

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MIDWEST: MINNEAPOLIS (612) 854-6555 ☐ CHICAGO (312) 986-1414 ☐ CLEVELAND (216) 752-1030  
DETROIT (313) 355-3510 ☐ PITTSBURGH (412) 343-4449

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WASHINGTON, D.C. (703) 979-5500

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